Telephony.

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MEANING OF "SERVICE FIRST."

"Service First" means Greater Service, a Greater Number of Subscribers, Greater Harmony and Co-Operation as well as Greater Efficiency.

Advertising and Publicity.

Public utilities have recognized the value of advertising and publicity. Power, lighting and gas companies in various parts of the country have developed effective methods of advertising and publicity. Independent telephone companies, however, have not progressed very far in such directions, but they are now realizing that much of advantage may accrue to them through proper publicity methods and some are attempting to do something in that line. There are, however, few managers who have the time and the ability to produce effective advertising matter and it is only the larger companies that can afford to employ the services of advertising experts.

There are several purposes to be accomplished through publicity. One aim, which is now of importance, is that of promoting better public relations. Other purposes include, of course, increasing the number of subscribers by promoting greater utilization of service, both local and long distance.

The mediums by which publicity for telephone companies may be obtained are various. Newspaper advertising, of course, has its effect. Before being attempted, however, the purposes desired to be attained by such advertising should be clearly in mind. The circulation of the paper and the space to be used should be carefully considered. An advertisement which in one paper would produce results, would not in another paper, owing to the different character of readers. For this reason the wording of the advertisements should be thought out with the utmost care so as to appeal particularly to the class of people reached by the paper.

In getting up the copy, the purpose it is desired to accomplish should be kept constantly in mind. All the points to be brought out probably cannot be covered in a single advertisement. In fact, it is much better to discuss but one point at a time and to drive it home. As to the arrangement of the advertisement, a study of the various magazines will furnish many ideas. What might be termed indirect publicity may also be obtained through the newspapers by means of news items regarding the company and its operations.

In the matter of strengthening public relations much can be accomplished by the use of folders or small cards, attractively worded, explaining the company's policies in regard to many matters which arise from time to time. Such folders could be sent out to subscribers with the monthly bills. A series of talks could, therefore, be presented to subscribers with very little expense.

Other means of publicity, such as "open house," illustrated lectures before local clubs and societies, demonstrations of toll service, etc., are being used more and more.

Some of the Independent telephone companies have carried out effective advertising campaigns. The methods and copy used may help other companies. TELEPHONY hopes that copies of result-producing advertisements will be sent in that other companies may receive the benefit of the experience of others.

As previously stated, however, it is lack of facilities for the preparation of effective advertising copy that deters many companies from advertising more extensively. It would seem, therefore, that the preparation of advertising copy, or suggestions, for Independent companies, is a matter which could and should be taken up by the various associations, both state and national. In other lines of industry, notably the lumber, the associations have conducted advertising campaigns which have been of great benefit. A series of telephone advertisements, prepared by a expert advertising man, could with but few changes, be adapted to a great number of companies. The expense could be borne by the telephone associations in view of the benefit to their members. Indeed, should state associations take up the work, the development of state long distance or toll business could easily be featured.

The Man Who Snubbed Fortune

By HERBERT KAUFMAN

In 1815 your great-grandfather standing on the site of the Flatiron Building, with the price of Broadway from Twenty-second street to Long Acre Square jingling in his pocket, cursed the "luck" that denied him the chance to get in on the ground floor of New York real estate. In 1860 your grandfather could have bought half the business district of Chicago for less than you can purchase a suburban building lot. Opportunity hasn't missed a working day since the Garden of Eden was laid out in home sites.

There's no particular time nor place for success. Every man everywhere meets fortune; every day looks her full in the face and snubs her half a dozen times between dawn and sunset. Tomorrow your neighbor will start to climb on a ladder which you could have mounted yesterday.

Fate hasn't neglected you—Providence has no pets. Whenever the clock ticks somebody stoops in a crowd and picks up a purse over which a throng has walked for hours. Every morning the patent office receives specifications of an invention that thousands had previously thought out, but lacked the enterprise to work out.

Prosperity is not an evidence of superiority, but rather of observation and common sense and persistence. The fact that you pay rent doesn't mean that you are of an inferior caliber to your landlord—you probably began with a better endowment of brains, but he used his mind to better advantage. There isn't an organization in town which does not number on its salary list at least one wage chaser who could give cards and spades to his chief, had he given himself a square deal and played the winning hand when destiny gave him his turn.

There's mighty little difference in the make-up of those who win and those who whine. Will and imagination are the greatest divisors of society. Nature occasionally short suits an individual. Once in a while she's careless and handicaps an unfortunate with congenital disabilities, but on the whole she strikes a very uniform average and maintains a consistent standard in the human product.

Every man can't angle in the same pond and crowd his creel, but there are always streams in which a catch can be made. All fish won't rise to similar bait, but those who try persistently and experiment long enough will fill their hooks.

You still have your tackle; your faculties are unimpaired; you know more than when you attempted before. You've suffered no irreparable loss until you've lost your nerve, and that condition is entirely a mental attitude. You may not be as able as you esteem yourself, but it's a dodgasted certainty that the rest of us will believe you are as incompetent as you think you are.

Take a new view of the world in the morning, because the world is new at every sunrise. Take your old view of yourself. Retrace your memory until you're back to the outset of your career. Put the same eagerness and earnestness and self-confidence in your thoughts and in your bearing. Believe that you're capable. You may miss again, but now you know from experience that a miss-out isn't a knockout. Edison made 10,000 attempts before he produced the incandescent lamp. You won't have to try nearly so often before you'll see a new light.

Now put on your hat, walk downtown and stand in front of the piece of property which you had the means to buy when it sold at a dime on the dollar of its present worth, and hereafter speculate on the future. Since you didn't take your profit in the past, make profit out of it.

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Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, Written by J. C. Kelsey and S. R. Edwards

46. Distinguish between parent and holding companies. What is one advantage of the parent company plan? Under what classification does the American Telephone & Telegraph Co. come?

47. Cite illustrations of the parent and holding company relationships as regards the American Telephone & Telegraph Co. and its associated companies.

48. Distinguish between "open" and "close" corporations and cite an example of each.

49. What is a private corporation? How does it differ from a quasi-public corporation?

50. Can a non-stock company be a public utility?

CHAPTER V. The Incorporation of a Company.

51. *Essentials of the Charter.*—It has been stated that a corporation is an artificial being possessing only those properties which its charter confers upon it. This charter is issued usually by the secretary of state under a general legislative act. The charter should be carefully drawn by a competent lawyer. It should set forth the name, object, capital stock, number of shares, location of principal office and duration of life of the proposed corporation. The general nature of the company's business, to lease, construct, maintain and operate telephone or other lines of communication in or connecting towns or villages in the state, should be clearly covered. It should also be stated that for these purposes the company is authorized to buy, sell, lease, hold and improve necessary lands and buildings and possess all rights, privileges and powers conferred upon telephone companies under the laws of the state.

The names and places of residence of the persons forming the corporation must be given. The number of persons necessary to form a corporation varies in different states. The Illinois law requires that at least three persons and not more than seven take part.

52. *Steps in Taking Out a Charter or Incorporating.*—The incorporation papers, or articles of incorporation as the draft of the charter is frequently called, must be signed by the incorporators and acknowledged before a notary public, before being sent to the secretary of state for his approval. If the objects of the proposed corporation are clearly defined and the incorporation papers fulfill all requirements, the secretary of state issues a certificate of incorporation. This is a statement that the papers have been filed for record with the department of state and duly recorded in the book of incorporations. This action gives the organizers, or incorporators, the license to open the books for subscriptions of capital stock.

As soon as the stock is subscribed for, a meeting of the stockholders is held to elect a board of directors. A ten-day notice, written or printed, must be given. A full report of the meeting is made by the incorporators to the secretary of state. This includes a copy of the notice, a copy of the subscription list, a record of the amount of capital stock paid in (not less than one-half, Illinois) and the disposition of the stock left in the treasury. It must be shown what proportion of the stock has been paid in property and services. The names of directors, terms of office, and managers are sworn to and filed with the secretary of state. These are the general requirements in the various states for becoming an incorporated body.

53. *Need of Good Advice Regarding Incorporation.*—In preparing the papers or articles of incorporation, it is quite essential that a competent lawyer be consulted. Through his advice, pitfalls, which might be hindrances to the company's progress and development, may be avoided. He will know what should be included in the charter to cover whatever activity the company might find it necessary to take up. As it costs no more to have a broadly drawn charter, care should be taken to include in it every possible activity in which the company might wish to engage. It is not required that a company carry on all the activities named in the charter. It cannot, however, conduct operations not specified.

The proper advice, therefore, is to go straightway to a lawyer before and while incorporating. It never pays to economize when one branches into strange activities. Laws were made so that lawyers could make a living, and he seems to be a necessary evil throughout all business enterprise. He has become the average railroad president, and his hand is ever visible in large corporate enterprise.

54. *Factors Bearing Upon Determination of State in Which to Incorporate.*—Having briefly reviewed the essential elements of a charter and the steps in organizing a corporation the question arises: "What is the best state in which to incorporate?"

This question came up in the organization of the North Dakota Independent Telephone Co. This was a merger of six or seven companies, and covered a great part of the state. The organizers were more or less interested together in politics, and naturally were opposed by another group which happened to be in power. Under the North Dakota laws, no recourse to law could go beyond the state courts, which were supposed to be controlled by the opposite crowd. Accordingly, Maine was selected as the state in which to incorporate this company.

This case serves only as an illustration, and it so happens that only one reason is given for incorporating in another state. In reality there are dozens of reasons which must be considered before selecting the place of incorporation. Some of them are:

The nature, friendly or hostile, of the incorporation act of the state in which incorporation is being considered.

Publicity is an important factor because some concerns wish to operate in secret, or may not care to have their competitors know what they are doing.

Policy of a state. Some states bid for the chance of incorporating, and they promise all the facilities possible.

Control of corporations by legislative power.

Expense of starting, taxes, capitalization and value of shares, payment for stock, stockholders' meetings within state, offices to be maintained in state, exchange of stock for property and services, preferred stock, debts, amendments, liability of stockholders and directors, failure of corporation and ability of creditor to enforce payment on unpaid stock given for services and dissolution are other considerations.

The legal status of the incorporation laws of a state likewise have a bearing in deciding upon the state of incorporation. The laws of New York and New Jersey, for instance, have been pretty well tested in the courts and their meanings interpreted.

55. *Where to Incorporate.*—It is now generally accepted that a company should incorporate in the state in which its principal office is conducted. The various states have made it as hard as they can for the foreign corporations. The expense of maintaining offices in other states, paying taxes in two or more places, holding stockholders' meetings, beside the suspicion that comes to the mind of the investor, make foreign incorporation more or less useless. It must be remembered that over 80 per cent. of the capital of Independent telephone companies comes from citizen investors of the state in which they operate. They are entitled to the protection of their state.

56. *Treatment of Corporations in Various States.*—As the states are divided in regard to treatment of corporations, the principal advantages and disadvantages of some of them will be discussed. The liberal states are Nevada, New Jersey, New York, Delaware, West Virginia, Virginia, Maine, South Dakota and Arizona. The careless or indifferent states are Indiana and Maryland. Kansas, Missouri, Nebraska, Iowa and California are average normal states. The difficult states are Illinois and Massachusetts.

57. *Advantages and Disadvantages of Incorporation Laws of Various States.*—Nevada is the easiest state of all in which to incorporate. Incorporators and directors do not have to reside in the state, and the holding of stockholders' meetings in the state is not necessary. Stock can be exchanged for property and services while the judgment of the directors in fixing the price is final. One cannot be held liable for unpaid stock given for service. A majority of the stockholders and directors can act at any time without a meeting. There is no franchise tax nor any levy on inheritance stock. Bondholders may vote, and stock can be voted cumulatively. The fees are low. There are no disadvantages whatever.

Arizona allows the same liberal treatment, but it insists that the annual stockholders' meeting be held in the state.

Connecticut now allows its corporations to hold stock in other corporations and is just as liberal as any state, except that it insists upon stockholders' meetings being held within the state, and an inheritance tax upon the stock which may fall under that condition.

Delaware outbid New Jersey for the incorporation business. It equals Nevada for its liberality except for three things: One director must live within the state; it collects an inheritance tax and imposes a franchise tax.

Maine allows one to exchange stock for service. It makes the directors' judgment on values final. One corporation can own stock in another. The fees are low, but the stockholders must hold meetings in the state and a tax is levied on the inheritance of stock.

New Jersey insists upon a director and an office with a prominent sign. It collects franchise taxes and does not forget the inheritance tax.

New York is an easy state, yet it goes the states mentioned one better by insisting that one-half of the capital stock must be paid in within a year. It also wants one incorporator and one director, each a citizen of the state, while two-thirds of the incorporators must be naturalized.

South Dakota asks that one-third of the number of incorporators live within the state. It specifically denies one corporation the right to own stock in another corporation, and insists upon full publicity and detailed reports of every transaction.

Indiana says three or more persons can engage in any manufacturing business, buy and sell any commodity, operate mines, power and lighting plants, telephone companies and stock yards. The name of the corporation shall not be the same or similar to others. It asks the object of the enterprise, the amount of capital stock, gives 50 years' existence, and asks the name of the town and the number of directors.

Kansas insists that the name set forth the specific object of the business. Three out of five stockholders, or incorporators, must live in the state, and 20 per cent. of the capital must be paid in.

Ohio and Minnesota hold stockholders for double liability, just as the stockholders of a national bank, in case of failure, not only lose what they put in, but an equal amount in addition.

58. *Requirements of Some of the Rigid State Laws.*—Massachusetts is the rigid state. All stock subscribed for must be paid in full. Stock can be issued for services, but a most careful investigation of the transaction is made. Business cannot begin until every dollar is paid in—no installment arrangement having any standing. Directors are liable for false statements.

Illinois is also a rigid state. Long before the Civil War the law prohibited corporations from owning land. There was a tendency of syndicates organized in England to purchase great agricultural tracts. This year a bill was passed by the general assembly and signed by the governor permitting a corporation to own land, not to exceed 80,000 square feet, and to erect a building upon it. The attorney general, however, has rendered an opinion declaring the law invalid in its present form, in that it presumes to amend the corporations act by title only. Pennsylvania limits real estate to 100 acres. Wisconsin allows 300 acres.

Illinois will not allow one corporation to hold the stocks of another corporation. This law was the basis of the Kellogg suit. It is also one of the bases of the Central Union Telephone

minority stockholders' suit. It is contended that the Central Union Telephone Co. is an Illinois corporation, and that the majority owner, the American Telephone & Telegraph Co., cannot own stock in it. But the New York charter of the American Telephone & Telegraph Co. allows it to own the stock, hence the dispute.

(To be Continued.)

Movement for Mutual Long Distance System in Kentucky.

An interesting development in the Independent telephone field is noted in news from Fulton, Ky., which is headquarters for a movement that involves the organization of the Independent exchanges in the southwestern part of Kentucky for toll service. To this end the National Independent Telephone Exchange has been formed and the field is now being canvassed in the interest of the organization. J. H. Sullivan is president of the new organization; E. M. Lucas, vice-president and general manager; M. K. Chowning, secretary and treasurer; J. H. Campbell, W. T. Stover and Will J. Thompson, directors, all of Fulton, Ky.

The plan of these promoters is to organize what is virtually a mutual long distance telephone system, which will connect up the local exchanges of the country. Those desiring to enroll in the exchange, individuals, business firms or corporations, will pay membership fees of $10 on joining the association and quarterly dues of 75 cents, the returns from which fees and dues will be expended in organization, construction and maintenance of a system of long distance telephone lines for use of the members.

According to the proposed plans, the association will place an exchange within a radius of every hundred miles, and will run first class metallic trunk lines from the switchboard of the association to the switchboard of every Independent and rural system that makes a contract for connection.

Copies of the association's prospectus have been received in Louisville, Ky., and the Central Home Telephone & Telegraph Co., through its superintendent, Minor Corman, has communicated with the officials of the movement, inviting them to attend a meeting of the Central Home company at Mayfield, Ky., to be held the latter part of August.

Whether the project develops or not it is to be presumed that the agitation will result in a connecting up of these isolated exchanges and connection with the long distance lines of the Central Home company. At present, in order to use toll lines the residents of the section, who are not Bell subscribers, as in Fulton itself, must go to Bell pay stations. Telephone men in Louisville who have seen the prospectus have read it with much interest, although they are dubious about it working out under practical tests.

Applications to the officers of the project for full particulars are invited. The Mayfield meeting will present an opportunity for these promoters to detail their plan before representatives of existing long distance companies, like the Central Home, and is awaited with much interest.

Meeting of Directors of A. I. E. E.

At the first meeting of the board of directors of the American Institute of Electrical Engineers for the administrative year which began August 1, held in New York City on August 10, President John J. Carty announced his appointments on the various Institute committees. The chairmen of the committees appointed are as follows:

Finance, J. Franklin Stevens, Philadelphia, Pa.; library, Samuel Sheldon, Brooklyn, N. Y.; meetings and papers, L. T. Robinson, Schenectady, N. Y.; editing, H. H. Norris, New York; board of examiners, A. S. McAllister, New York; sections, H. A. Hornor, Philadelphia, Pa.; standards, C. A. Adams, Cambridge, Mass.; code, Farley Orgood, Newark, N. J.; law, G. H. Stockbridge, New York; power stations, C. F. Uebelacker, New York; transmission, P. H. Thomas, New York; railway, D. C. Jackson, Boston, Mass.; protective apparatus, E. E. F. Creighton, Schenectady, N. Y.; electric lighting, Clayton H. Sharp, New York; telegraphy and telephony, G. M. Yorke, New York; industrial power, David B. Rushmore, Schenectady, N. Y.; use of electricity in marine work, C. S. McDowell, New York; electro-chemical, A. F. Ganz, Hoboken, N. J.; electro-physics, John B. Whitehead, Baltimore, Md.; records and appraisals of properties, Philander Betts, Newark, N. J.; educational, V. Karapetoff, Ithaca, N. Y.; public policy committee, Calvert Townley, New York; development of water powers, Calvert Townley, New York; patent, Ralph D. Mershon, New York; membership, W. A. Hall, Lynn, Mass.; historical museum, T. C. Martin, New York; United States national committee, international electro-technical commission, C. O. Mailloux, New York; relations of consulting engineers, L. B. Stillwell, New York; code of principles of professional conduct, George F. Sever, New York; hazards from lightning, Elihu Thomson, Swampscott, Mass.; reserve corps of engineers, Bion J. Arnold, Chicago, Ill.; constitutional revision, Bancroft Gherardi, New York. Representatives were also appointed on various joint committees and other bodies.

Secretary F. L. Hutchinson reported that since the last meeting of the board, the executive committee had voted to increase from a limited to a full participation its representation in the International Engineering Congress. The Institute's limited participation in the Congress has been due to the fact that at the time the original action was taken in June, 1912, the Institute had guaranteed the entire expenses of the International Electrical Congress which has since been indefinitely postponed. The action of the executive committee was unanimously ratified by the board. The increase from limited to full participation in the Congress entitles the Institute to the full compliment of representatives upon the San Francisco committee of management, that is, an increase from two to four representatives.

Convention of Indiana Independent Association.

An interesting as well as instructive program is in the process of preparation for the convention of the Indiana Independent Telephone Association, to be held at the Claypool Hotel, Indianapolis, September 15 and 16. A number of subjects most pertinent at this time to the telephone business will be discussed. Judge Samuel R. Artman, of the industrial board, will speak on the different phases of the Indiana Workmen's compensation law. One of the members of the public service commission will also speak on the subject of "Transmission" from a practical standpoint.

Frank E. Bohn, secretary of the association, urges all Independent telephone men, whether from Indiana or elsewhere, to attend the convention.

Plain Grove Company Increases Its Toll Facilities.

A new circuit of No. 10 copper wire is being strung on poles of the Plain Grove Telephone Co. between Volant and Plain Grove in order to afford added toll facilities between that company and points in the Shenango and Mahoning valleys in Pennsylvania and Ohio.

Sanford, Fla., System Sold to Southern Bell.

The Southern Bell Telephone & Telegraph Co., with headquarters at Atlanta, Ga., has purchased the system of the Sanford Telephone Co., at Sanford, Fla. The Southern Bell company is planning to improve the plant at a cost of about $40,000.

Efficiency in the Operation of Telephone Plants

Factors Which Make for Efficiency—Co-operation, Properly Made Records, Systematic Inspection and Testing, Rewarding Employes for Efficient Service—Paper Presented at Convention of Illinois Independent Telephone Association

By Arthur Bessey Smith

Those who have been responsible for the development of automatic switching have felt it their privilege not only to manufacture the apparatus, but to secure its efficient operation. For this purpose the manufacturer has made an exhaustive study of operating methods and conditions. In every case it has been found that smooth and successful running can be secured at low cost if the fundamental principles of efficiency are strictly applied. These principles apply to the standardization of apparatus, adjustments, conditions and methods of work and the formation of a suitable organization.

It is believed by the writer that many of the principles and methods used by automatic companies can be applied just as well to the operation of manual telephone plants. With this in view, your attention is respectfully desired to the discussion which follows.

Effectiveness is the first requirement of a telephone plant. This must be sharply distinguished from efficiency. Effectiveness consists in securing most completely the results desired. It is the duty of a telephone plant to talk, and I feel confident, from the record of Independent telephony, that you have achieved it. The next step is to improve efficiency.

Definition of Efficiency.

Efficiency consists in securing a good result with the least expenditure. Mechanical and electrical efficiency is exceedingly definite, and the ultimate perfection, beyond which no one can go, is definitely known. If we put 1,000 foot pounds of energy into a machine and get out 800 foot pounds, we know that we have secured an efficiency of 80 per cent. Further, we know that we could never expect to get more than 1,000 foot pounds out of it.

When we come to the expenditure of labor (and money is simply labor in portable form), we find that our efficiency may not be as definitely stated, although it is very clear. If one man produces a certain article for $5 and another man produces it for $4, other things being equal, we are correct in saying that the latter man has done his work more efficiently. It is not possible for us to state what per cent. efficiency he has secured, because we do not know the minimum cost for which the same article can be produced under the most ideal conditions. Hence the standards of efficiency in labor, though elusive, are very real and worthy of ardent attention.

Why We Strive After Efficiency.

But why should we strive after efficiency? Primarily, because efficiency is right. It is wrong to waste time doing things in wrong ways, when there are so many great and valuable things needing to be done. I have no doubt that most of the world's progress has been retarded because of our own inefficiency, which may be accounted for by our spending much longer time than is necessary in doing things which should have been done quickly and the spare time applied to conquering things on ahead. But if we must appeal to the baser incentive of self-interest, we must recognize that competition will sooner or later force out all but those who are highly efficient.

The object of a telephone plant may be very clearly defined: First, to give telephone service, and, second, to make profit for the investors. The production of telephone service is its prime object, the profits being more or less secondary, though, of course, necessary to the perpetuation of the enterprise. Now that we have stated it we can recognize that lack of clearness as to our ideal will lead us into very much trouble. People with muddy notions of what they want to do, do not make much progress. It is only when things clear up that satisfactory progress can be made.

As an example, let me ask whether your company is definitely committed to the development of long distance service. If you are, then you will see to it that every piece of equipment and every line is adapted, built, and maintained in order to give the least possible loss, the best possible transmission, because it may at any time form a link in a very long conversation. If you are definitely committed to local service only, it is unwise to spend great sums of money to reduce the transmission losses in apparatus which will never be a part of a long distance conversation. You will devote your attention to fostering the local idea and to making your local service all that your subscribers can possibly desire.

If, on the other hand, you do not know exactly what you want, you will be led at times to make expenditures for the highest grade of apparatus and construction. At other times, you may be led to put in inferior apparatus with the result that your plant is incongruous, and cannot utilize to its best advantage what long distance equipment you do have; hence it will not earn its value. Clearness of ideals is absolutely essential, if we desire to operate efficiently.

Co-operation Essential to Efficiency.

The telephone plant is operated by people whose duties differ from each other very considerably. Each man or woman has certain work allotted, and to that person the company has the right to look for its proper performance. No one can shirk without throwing a burden on others, in addition to wasting the money of the company and rendering the position of the company less secure. The inefficiency of one man alone may not wreck the company, but if all are inefficient, the breakers of distaster are white ahead. Co-operation between all concerned is absolutely essential to efficiency. All must bend together. Inter-departmental strife, individual jealousies, all result in wasted time, wasted money, and danger to the security of the company and the employment of all dependent on it. There should be one law for persistent lack of co-operation—cast out the offender.

Properly made records are very essential to the attainment of a high grade of efficiency. Records are often made from a mistaken standpoint, viz., that the records are valuable in themselves. People sometimes like the idea of being able to look back over their elaborately prepared and carefully maintained records to find that on a certain day of a certain year a certain thing occurred at a certain place. This may all be very nice, but it does not necessarily mean any improvement in efficiency.

The main purpose of records—efficiency—must be kept in mind. Hence the records must be so designed that they will show up leaks, reveal weaknesses, and the causes of interruption to traffic. They should show where the money goes in order that the management may find out why it goes there. It is of vital importance that we know how much our various operations are costing, how much money we spend for clearing this kind or that kind of trouble, how much it costs to replace dry cells or to charge batteries, how much the renewals of receiver cords are costing, etc. It is only when records

reveal such things as these, that the management is able to put its finger on the weak spots and cause them to be strengthened.

Records must be so kept that they will be immediately available. We cannot wait until the end of the year to find out the drift of affairs. Often we cannot wait until the end of the month to find out our condition. The more copying and recopying, the more summing and resumming there is to be done, the greater is the chance for error to creep in and the greater is the delay in getting the story which the figures have to tell; the farther into the past, the less likely we are to take action.

Importance of Having Control Over Employes.

The control which is exercised over the men has much to do with the efficiency of the operation of any plant. This means that their time must be subject to your disposal and not left to their own devices. It does not involve nagging, but means merely a wise planning regarding men, time and jobs. It means the suiting of the man to the job in order that the work shall be done in the least possible time and with the least expenditure of money. Not all men are equally well fitted to do all kinds of work. This the manager or superintendent can best learn by close observation of the performance of the man, and for this he must to a large extent depend upon proper records. Being human, we are prone to remember some things and forget others and it is not wise to depend upon the memory entirely when balancing up human performance.

For example, men should report for duty in the morning, not simply go to work at some distant point. The report need not always be made in person, but may be made by telephone; but the employer must know when the man says he went to work in order that proper expectation may be based as to the time and amount of work performed. If a man reports at a certain time and loafs around for a while before beginning work, the effect will be shown up in an unduly long time on the job; while if he reports later than he should, his total pay will be shortened by that amount. The control as to the disposition of employes' time should be wholly in the hands of the employer.

Not all men can be held to the same performance. One man will work much more rapidly than another and still do equally good work. In arranging a schedule of work this must be kept in mind. But those who are wastefully slow should be eliminated, and the slowest men should get the least pay if their work is no better than that of the others. However, if men are taught properly, they can work to a much higher schedule, doing more and better work and earning more money than if left to their own devices.

Relationship Between Workmen and Those in Charge.

It is time that we got the proper view of the relationship between managers, superintendents and foremen, and the men who work under them. The workmen are not really under their foremen; the foremen should be under the workmen to form a support. It is the workmen who do the work, and upon them the success or failure of the telephone plant depends. We used to turn a man loose and tell him to run the plant. This has only produced inefficient results. The labor of planning work should be taken off the shoulders of the workman and put where it belongs—on the foreman or superintendent. The latter exist for the sole and only purpose of making the work of the workmen as highly efficient as possible. Remove this consideration and the necessity for superintendence vanishes. "He that will be great among you, let him become servant of all."

The planning of an overseer has for its object the release of the workman from mental strain and worry. It is to free him from those things which hamper his work and keep him from attaining his best.

If we could possibly do it, all trouble should be caught before it occurs. We know that this is impossible, but nevertheless, we can achieve it to a very large degree—much larger than most of us realize. Catching trouble before it occurs is cheaper for the telephone company, more satisfactory for the public, and creates a good feeling among the men, who feel that they are actually accomplishing something and not merely stemming an endless tide of trouble tickets.

Preventing Troubles by Proper Inspection.

Trouble can be caught only by scheduled inspection and permanent repairs. Of course, not all troubles can be so anticipated, because lightning, wind, sleet and fire attack us without sufficient notice, and we could not always prevent results even if we did have amply warning. But it is surprising what a large portion of troubles can be prevented by proper inspection. Nearly all apparatus trouble and very much of line trouble come under this classification.

A farmer once found a guy wire somewhat in his way in a corner of his field. Without telling anybody, he simply cut it. The pole sagged a little, but did no immediate damage. Thus it stood for two months. One night a fresh breeze came up (perhaps a little fresher than usual) twisted most of the wires together for several spans and cracked the unguyed pole. It is absolutely certain from the nature of the job that if an inspector had detected the loss of the guy and the pole had been properly supported, both it and a large part of the crossing of wires would have been saved.

The dry cells in a certain telephone got weaker and weaker. They were still good enough for local service, but one night there came an emergency long distance call, and the telephone was useless. The service failed because of lack of inspection.

It is surprising the amount of trouble which vanishes when regular inspection and regular duties are put into force. It is true that the effect will not be seen when the system is first started. If a plant has been run upon the old system of waiting until a trouble appears before the remedy is applied, it will take a longer or shorter period for the regular inspection to show its effect. However, the results are absolutely certain if the work be thoroughly done. In time, regular systematic inspection and adjustment of all equipment will prove in, with lowered operating expenses and higher quality of service.

Regular inspection requires that there shall be very definite standards for the performance of all apparatus, as well as standards for the construction and repair of those things which have no mechanical motion. Lack of a definite ideal results in uncertainty on the part of the men, so that bad service and inefficiency are certain to result. If we consider hand generators, we must apply to them some test which will cause them to exert their power. For instance, the hand generator should be able to deliver a certain strength of current through a certain resistance when the crank is turned at a definite speed. A bell should be capable of ringing code signals upon a certain minimum current. Every relay must have its definite operating and release currents, to which standards the relay should be definitely held.

Establishing Proper Standards.

In fixing standards, it is important that a proper factor of safety be allowed. If a bridge builder designs a bridge to hold a load of 100,000 tons, he would be guilty of an engineering crime if he used that figure in calculating the size of his beams. He would use a factor of safety of at least 10 or 20; that is, he would make his bridge capable of supporting 10 or 20 times the required load. If we find that in practice one of our switchboard relays gets 50 milli-amperes, we would not adjust the relay to pull up on 50 milli-amperes because if we did, the slightest impediment might cause the relay to fail to operate. Instead, we would adjust the relay to work properly on perhaps 25 milli-amperes, so as to have an ample margin or factor of safety, that the response of the relay may be assured. This principle of margin or factor of safety must be carried to every part of the telephone plant.

In the operation of automatic telephone plants, the matter of standards has received careful attention, and every piece of apparatus is adjusted to meet definite requirements. These requirements can be duplicated from one end of the country to the other. They make for uniformity in the results secured. To them is due in a large degree the success which automatic switching has achieved.

After having established the proper standards for the operation of equipment or the structure of other parts of the plant, it now becomes our duty to see to it that these standards are put into force and maintained. Some things get out of order very easily, requiring frequent inspection. Other things are more permanent and may go much longer between inspections. To inspect all things with equal frequency means to waste time inspecting things which do not change readily, and to allow things which change readily to get unduly out of order. The frequency of inspection must be found by experience.

The illustrations which follow are taken from standard automatic practice, supplemented by certain suggestions as to parts of manual plants which can profitably be placed upon routine inspection. It is not expected that the period time indicated is necessarily correct. It will not do to wait until a theoretically correct period of inspection has been determined before putting inspection into force. Make up some kind of an inspection list, specifying the period of time between inspections of each kind of apparatus, and put it into force at once. Then by watching the trouble sheet, you can soon determine which parts are being inspected too often and which parts are not being inspected often enough. It is a more or less simple matter to shorten and lengthen the inspection period until we have a practical balance. Inspections are made in periods varying from one hour to one year. Some things may need inspection every hour, as for instance, the meters used for registering traffic during the taking of a peg count.

Daily and Weekly Inspections.

Alarm signals of all kinds should be inspected daily, including those on the main distributing frame, fuse alarms, telltale indicating failure of ringing current from the bus-bars, etc. It is well also to reverse the harmonic converter polarity daily and test its selective ringing ability.

It is suggested that also there be a daily test of all switchboard cords to determine particularly the condition of the cord proper. This is especially valuable where tinsel cords are used. All the cords on the operator's talking set should also receive daily inspection. The test of the performance of the cord apparatus might perhaps be made less often than daily.

Water the storage battery and over-charge it. Make close inspection of harmonic converter or pole changer and adjust it. Inspect all operators' head sets and telephone apparatus. Check up all testing equipment to see that it is in perfect order.

The operators themselves should receive a periodic test as to their ability to handle usual as well as unusal conditions. This may include a test of the speed in answering calls and the accuracy in making busy test and the selection of numbers.

Monthly Tests and Inspections.

Test the frames of relays and other apparatus to make sure that they are clear of battery or ground.

All line and cut-off relays should receive periodic tests to determine their condition and to bring them up to the standard condition. The exact period is not recommended.

In a certain telephone plant, it was found that apparatus mounted near the floor did not operate as well as that which was higher up. Investigation showed that the men had a strong aversion to working on this apparatus and passed it by in order to work on apparatus farther away from the floor.

It was also noted that the floor, while not positively filthy, was to say the best quite dirty. It will be acknowledged that men cannot be blamed for not sitting on a dirty floor, in order to work on the apparatus. A remedy was found in the thorough cleaning of the floor, finishing the wood-work in a neat and attractive manner and keeping it clean all the time.

Very often a man fails to attain a sufficient dexterity in the performance of his duties, for the sole reason that he is not equipped with proper tools. It may often be advisable for the company to furnish certain tools, but on the whole it may be better that every man should own them himself. But no matter whether the tools are furnished or owned by the men, certain things are necessary, and without them a man cannot be expected to do his best. It is the privilege of those in charge of the work to determine what tools and supplies are necessary, to make out definite, printed or written lists of such things, and see to it that every man is thus equipped. Working with deficient equipment spells inefficiency.

Finding out the One Best Method.

It is being more and more fully demonstrated that there is but one best way to do each thing. If conditions change, the method must change, but for every set of conditions one method will yield the best result and will do it with the least expenditure of time and money. If you are trying to find out the best way, experiment to your heart's content. It is what you ought to do, but be definite about it. Do not go at it in a haphazard way, but attack each problem one at a time and run it down until you are certain that you have the best method for doing it. When you have found out the best way, prove it to your men and then insist that all shall follow that method.

Having found the best way to do the work, issue the instructions in permanent form (printed or written), so that they may be easily consulted from time to time. This gives definiteness to the ideals and is of great assistance in securing efficient work, particularly if all are held strictly to account. If, however, you make a change in a method or abandon it, be sure to call in the old instructions. There should be no dead letter laws.

If the men respond to the demand for efficiency, as they most certainly will if properly handled, do not forget the reward for efficient and effective service. It is for you to state what in all fairness is the proper reward. On the other hand the man who is costing the company money instead of being a producer, cannot be kept on the company's payroll.

Pertinent Questions for Everyone.

1. Clearly Defined Ideals: Do I know definitely, exactly, what result is expected of each part of my work?
2. Common Sense: Am I sensible in my work, with sound and safe methods?
3. Competent Counsel: Do I seek and follow out the advice of those who know?
4. Co-Operation: Do I fit properly into the organization, and work smoothly and efficiently with others? Can I sink my selfishness for the good of the organization?
5. Fairness: Am I fair in my treatment of my associates of the company, and of the public?
6. Records: Do I make out my records clearly and fully so that they have real value to the company.
7. Time: Do I arrange my time so that there is no loss, so that my work is completed on time?
8. Regularity: Do I take care of my work regularly not omitting or delaying "just this once?"
9. Grade of Work: Do I keep my part of the work up to standard, so that it does not gradually get worse due to my insufficient repairs?
10. Methods: Am I using the best methods in my work, so as to get results most permanently and with the least effort and time?
11. Instructions: Am I intelligently carrying out the instructions which have been given to me by those who know?
12. Reward: Are my eyes too firmly fastened to my salary, or am I looking chiefly to the more lasting reward of the satisfaction of good work well done?

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

The answer to these questions will be found in the reading section bearing the same number. Answers are not to be sent to TELEPHONY for criticism. For the benefit of those desiring the advantages of a correspondence course, the Engineering Extension Department of the Iowa State College has volunteered to answer questions and criticize replies to questions and solutions of the problems which will be presented from time to time in connection with the course. No charge will be made for this service and the offer applies to all subscribers of TELEPHONY regardless of whether they live in Iowa or elsewhere. Correspondence should be addressed to the Engineering Extension Department, Iowa State College, Ames, Iowa.

166. Give the advantages of the graphic method of representing variable quantities.

167. Using the curve, Fig. 65, determine the resistance of 1.5 miles of No. 19 B. & S. gauge aerial lead covered cable conductor.

CHAPTER VII. Graphic Methods (Continued).

168. *Curve of heat units developed by a current of ten amperes flowing through various resistances.* Another example of a straight line curve is given in Fig. 66. This curve represents the development of heat units in circuits of various resistances by a current of ten amperes flowing for one second. The lower horizontal border is divided into parts, each one

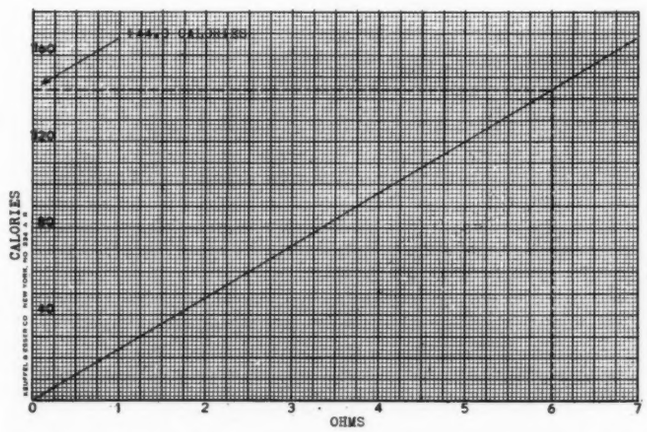


Fig. 66. Heat Units Developed by 10-Ampere Current in 1 Sec.

representing some number of ohms of resistance of the various conditions that the curve is desired to include. The left hand vertical border is divided to represent heat units, each of the spaces marked out by the heavier lines being taken to represent 20 heat units or calories.

Suppose that it is desired to determine from this curve the total number of heat units produced in a circuit of six ohms' resistance by a current of ten amperes flowing for one second. The point on the lower horizontal border where six ohms is found, will be found directly below a point on the curve.

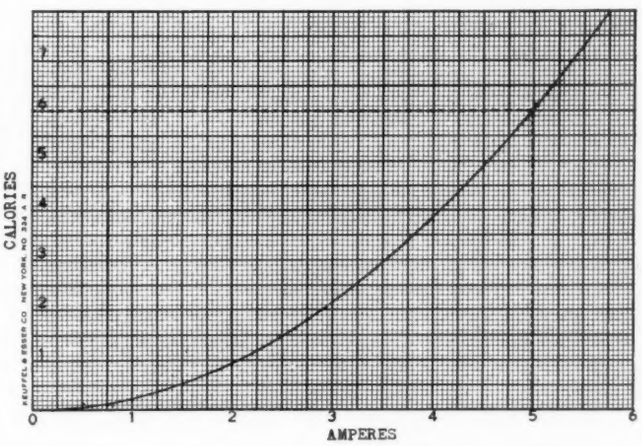


Fig. 67. Heat Units—One-Ohm Resistance, One Second.

This will determine the point on the left hand vertical border giving the desired value. The determination of this value is indicated in the figure by the dotted lines, from which it will be very easy to follow the matter through. From the curve the reader will readily see that ten amperes flowing for one second through a resistance of six ohms will develop 144 heat units. In the same way the reader, for the sake of practice, may profitably determine from this curve the number of heat units developed by a current of ten amperes flowing for one second through a circuit whose resistance is three ohms, for instance, and then in a circuit whose resistance is five ohms. A little practice in reading curves of all sorts will be found to produce the ability to take off determinations with surprising accuracy and speed.

There is another advantage in the general use of curves. When the data is being computed from which the curves are drawn, it is obvious that all the points located on the paper for the curve should fall in the same general line if the curve is a regular one. The points located may then be readily joined by a curve without abrupt changes in direction. If any point is computed and falls outside of the general line of the curve, it will justify the most careful check of the computation to determine whether any error has been made. It is in this way that the general use of curves in engineering has been of so much assistance in securing the necessary accuracy. The use of curves is made a regular means of check-

ing computations by many engineers, as a part of the ordinary office routine.

169. *Curve of heat units developed by various numbers of amperes flowing through a circuit having a resistance of one ohm for one second.* In Fig. 67 is shown a curve which is not a straight line. This curve gives the number of heat units developed in a circuit having a resistance of one ohm by currents of various strengths flowing for one second. To determine the number of heat units, for instance, developed by a current of five amperes in such a circuit, it would be necessary to proceed as follows:

Immediately above the point at which five amperes is found in the lower horizontal border, is found a point on the curve. By following a horizontal line from this point to the left hand border the number of heat units developed will be found. This operation is clearly indicated by the dotted lines and the reader will readily see that the number of heat units developed is six. In the same way the reader should, for practice, determine the current in amperes which would develop 3.84 calories when flowing for one second in a circuit having one ohm resistance.

170. *Graphic methods and permeability.* In section 75 (TELEPHONY of March 27), a table was used to illustrate the permeability or modifying power of iron in the magnetic circuit. In this table only four values of the total possible number of different values of lines of force threading the iron were given. More could have been readily calculated but in order to economize in space and at the same time illustrate clearly the matter in hand, only four were required.

While the table referred to is correct in every detail *as far as it goes,* it is incomplete for many intermediate values of the magnetic flux. Suppose, for instance, it was desirable to de-

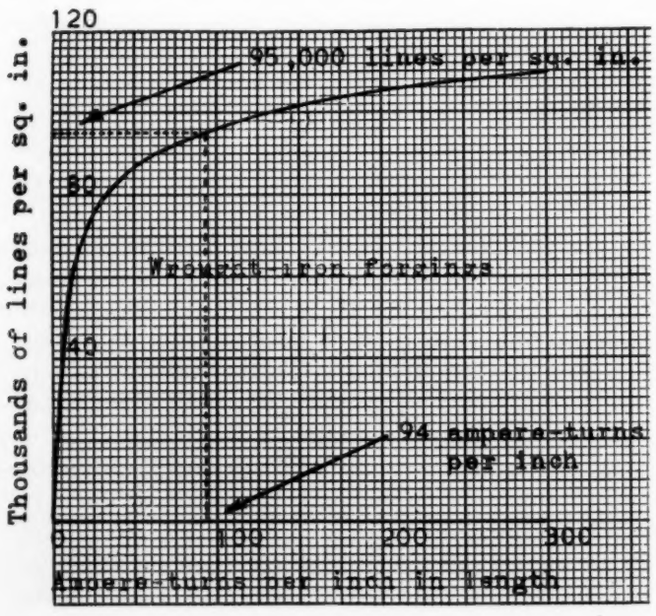


Fig. 68. Ampere-turn Curve for Wrought Iron Forgings.

termine the number of ampere-turns per inch required to create 95,000 magnetic lines of force per square inch in wrought iron. This determination would involve rather extended calculation and this calculation would necessarily have to be repeated each time a number of lines per square inch was required that did not appear in the table. By the employment of the graphic method in recording the relation between the number of ampere-turns per inch and the number of lines of force produced, it is possible to combine all values into one very easily read curve.

171. *Determination of ampere-turns, graphically.* The curve of ampere-turns for wrought iron forgings is shown in Fig. 68. The lower border is divided into spaces, each one of which represents a definite number of ampere-turns per inch. The left hand vertical border is divided into spaces, each one of which has a definite value in magnetic lines of force per square inch. The determination, for instance, of the number of ampere-turns, required to produce 95,000 magnetic lines of force per square inch in wrought iron, becomes a very simple matter with this curve.

At a point on the left hand border corresponding to 95,000 lines of force, a line may be drawn to the right until the curve is intersected. From the point of intersection, a line should be dropped to the lower horizontal border. This will locate a point which by its location, will determine the number of ampere-turns required. In Fig. 68 this particular determination is clearly indicated by means of dotted lines. The number of ampere-turns per inch required to produce a flux of 95,000 lines per square inch in wrought iron is seen to be 94. Similar curves are, of course, required for each kind of iron and steel. While they will all be found to have the same general shape, differences due to the varying character of the metal, cause them to be unsuitable for any metal but the kind for which they were calculated.

The reader should note that while 25 ampere-turns per inch produce about 75,000 lines per square inch in wrought iron having no flux already threading it, the same number of additional ampere-turns per inch produce only 2,000 *additional* lines of force when the iron is already carrying 102,000 lines per square inch (150 ampere-turns per inch). This is a very striking illustration of the reduction in the permeability of the iron as the flux through it is increased.

(To be Continued.)

Virginia Home Company to Double Capacity.

On account of the rapid growth of its business, the Virginia Home Telephone Co., of Franklin, Va., has found it necessary to double the capacity of its plant and increase its facilities. The work includes a material increase to the switchboard capacity, and the installation of 3,000 feet of cable.

Keystone Statement of Earnings for July.

The Keystone Telephone Co., of Philadelphia, Pa., has issued its comparative statement of earnings for the combined companies for the month ended July 31, 1915, and the seven months ended on that date, as follows:

	For Months Ended		For Seven Months Ended	
	July 31, 1915.	Year Previous.	July 31, 1915.	Year Previous.
Gross earnings	$114,204	$111,467	$784,825	$767,715
Operating expenses and taxes	58,640	56,529	390,047	379,844
Net earnings	$ 55,564	$ 54,938	$394,778	$387,871
Less interest charges	26,940	26,231	185,604	181,815
Net surplus	$ 28,624	$ 28,707	$209,174	$206,056

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

I. C. C. Valuation Committee of Independents.

At the conference of representatives of Independent telephone companies held at Hotel La Salle, Chicago, August 4, to consider the valuation of telephone companies started by the Interstate Commerce Commission, a committee was appointed to formulate plans for properly presenting the Independent companies' attitude toward the valuation work and to arrange for conferences with officials of the Valuation Division of the Interstate Commerce Commission.

This committee consisted of: C. Y. McVey, of Cleveland, Ohio; Wm. Fortune, of Indianapolis, Ind.; F. H. Woods, of Lincoln, Neb.; A. F. Adams, of Kansas City, Mo.; H. L. Reber, of St. Louis, Mo.; E. B. Fisher, of Grand Rapids, Mich.; G. W. Robinson, of St. Paul, Minn.; B. G. Hubbell, of Buffalo, N. Y.; S. G. McMeen, of Columbus, Ohio; E. M. Cooke, of Philadelphia, Pa.; and F. B. MacKinnon, of Washington, D. C.

This committee met at Hotel La Salle, Chicago, August 14, and elected H. L. Reber chairman of the committee and F. B. MacKinnon, secretary. The committee expressed its opinion formally that Valuation Order No. 18 of the Interstate Commerce Commission should be complied with as fully as possible by all companies and without delay—and that all companies should co-operate with the commission in working out the valuation problems.

After considerable discussion of the possible requirements of the commission under future orders, it was decided to appoint a sub-committee of five to co-operate with all other common carriers subject to the valuation act and to arrange for special conferences with the Interstate Commerce Commission to discuss tentative valuation orders and methods.

This sub-committee consists of S. G. McMeen, of Columbus, Ohio, chairman; H. L. Reber, of St. Louis; A. F. Adams, of Kansas City; G. W. Robinson, of St. Paul, and Wm. Fortune, of Indianapolis. F. B. MacKinnon, of Washington, D. C., was elected secretary of the sub-committee which has power to act for the general committee.

The formation of these committees indicates how seriously the larger companies are viewing the valuation work of the Interstate commission. About 140 companies have been served with Valuation Order No. 18—the initial order—but it is expected that in due time, all other companies subject to the jurisdiction of the commission will be included within the scope of the valuation work. The committees, therefore, have the responsibility of representing practically the entire Independent telephone industry. Their work will be watched with interest by all companies and the members of the committee should have the hearty co-operation of all. Arrangements were made for giving every company full information as to the requirements of the commission and the suggestions of the joint committee.

Rate Increase in Albion, N. Y., Held to be Justified.

The New York Public Service Commission on August 11 decided the long pending case of the board of supervisors of Orleans county and the trustees of the village of Albion against the New York Telephone Co., as to increase of rates. Commissioner Carr, who rendered the opinion, finds that careful study of the elaborate inventory and appraisal and the figures for the business done in the area affected justifies the increases whereby two-party business lines were raised from $24 to $30 per annum and four-party residence service from $12 to $15 per annum.

The increases were made in 1911 and the complaint was filed in July of that year. It resulted in one of the most elaborate valuation records which has come before the commission. Numerous hearings were held and over a thousand pages of testimony taken. The value arrived at after inventory and appraisal was based somewhat on the testimony of the company's experts and it was not proven that some of the amounts were actually expended. But, as a further check on the tangible value of the telephone property in service in Albion, figures were introduced to show the reproduction cost of the plant as of December 31, 1912, based on actual bids received for the material required plus the expense of installing the same. The amount of this estimate cost was $276,400 which was checked by the commission's engineers and found to be substantially correct. The depreciation items were also closely scrutinized by the commission's engineers and approved.

"There are no complicated legal questions involved," says Commissioner Carr's opinion, "and the matter can be disposed of upon the facts and figures hereinafter set forth."

"This opinion," he concludes, "is perhaps longer than would be necessary to reach a proper decision of the case, but it was felt that it might be better under the circumstances to elaborate somewhat upon the facts so that it would be thoroughly understood that the case had been considered from all standpoints before a decision was reached."

New Schedule of Rates Filed for St. Louis, Mo.

In accordance with the recent order of the Missouri Public Service Commission, the Southwestern Telegraph & Telephone Co. has filed a new schedule of rates for business telephones, in St. Louis, which will increase the company's income $107,000 a year. The commission refused to order effective a schedule which the company estimated would increase its revenue $157,000 a year.

The new schedule does not change the rates for residence telephones. It places the business service largely on a measured basis.

For a two-party line, the new schedule allows 720 calls a year for $3.25 per month. At present 600 calls are allowed.

For direct line, 840 calls are allowed for $3.75 a month. At present 600 calls are allowed.

For direct line, 1,200 calls, the charge is $5 a month. At present 800 calls are allowed.

For direct line, 1,500 calls, the charge is $5.75. This classification has not been quoted in the past.

For direct line, 1,800 calls, the charge is $78 a year. At present the charge is $72 a year.

For unlimited direct line service the new charge is to be $108 a year. At present it is $78.

For private branch exchanges, including switchboard, two telephones and two trunk lines, with 3,000 calls per year, the price is increased in the new schedule from $14.75 per month to $15.25. Additional messages are charged for at two cents each. Each additional trunk line costs $2.50 a month, and each additional telephone 50 cents a month. There are no changes in the charges for additional messages, trunk lines and telephones.

For private branch exchanges, unlimited service, including switchboard, two telephones and two trunk lines, the charge is increased from $19.50 a month to $27 a month. The charge for each additional trunk line is increased from $6 to $10 a month. The charge for additional telephones is 50 cents and is unchanged.

The company has on file a petition for a rehearing of its rate case. It contends the commission has undervalued its property, and that it is entitled to earn more than the new schedule will permit it to earn. The commission has not indicated whether it will order the new schedule effective before it passes on the petition for a rehearing.

Proposed Consolidation of Providence Telpehone Co.

A plan for the consolidation of the Providence Telephone Co., with the New England Telephone & Telegraph Co., has been submitted to the stockholders of the local corporation. The combination is to be effected by an exchange of stock on the basis of four shares of New England Telephone & Telegraph for five shares of Providence Telephone stock.

In a letter to stockholders, the Industrial Trust Co., of Providence, which has been appointed as depositary, explains that if on or before November 1, 50,000 shares of the capital stock of the Providence Telephone Co. shall have been deposited, the New England Telephone & Telegraph Co. shall be under obligations to exchange its stock for the stock deposited on the basis outlined, but if 30,000 shares are deposited the exchange will be at the option of the New England company.

A condition of the plan is that several of the directors of the Providence company shall continue as directors of the New England company. Until it is known whether the plan is generally approved by the stockholders of the local company no attempts will be made to work out any operating details. No change in rates will be made, it is stated. The par value of the stock of the Providence company is $50, but its present market price is $96. The company pays an 8 per cent. dividend and has a surplus of $500,000. The capitalization is $5,000,000.

To Investigate Telephone Situation in Portland, Ore.

The recently formed Public Service League of Portland, Ore., is making a study of the telephone situation in that city. Its purpose is to remove some of the evils of having two competing telephone systems with a view to mitigating the excessive burden thrown upon those who have found it necessary to have both telephones.

Several hundred letters were recently sent out to those using two telephones, asking them to ascertain what additional expense the maintenance of two telephones entailed. Cards were enclosed for an expression of opinion on two proposed solutions: Municipal ownership and interchange of service. A large number of replies have already been received, the greater number favoring interchange of service between the two systems. A number advocated municipal ownership and but few were content to leave the situation rest as it is.

The rates charged by the Bell company in Portland are higher than most cities of about the same population. The rates are: $96 per year for business telephones and $36 for residence. The rates of the Home Telephone & Telegraph Co. of Portland are: $72 for business and $24 for residence telephones.

Compromise on Telephone Tolls at American Fork, Utah.

Reports from American Fork, Utah, and from the offices of the Mountain States Telephone & Telegraph Co. state that a compromise has been brought about and the possibility of a new telephone company connecting American Fork, Lehi and Pleasant Grove is thereby rendered slight. The agitation started when the telephone company discontinued four-party lines and raised the rates from $1.75 to $2 a month on all residence telephones, at the same time putting on a 5-cent toll between the three towns.

Protest was made and mass meetings were held in an effort to get an Independent telephone company established. This work was proceeding when the telephone company, through its special agent, A. G. Krauss, offered a compromise, which was accepted.

The compromise is that the tolls shall be discontinued, and that instead the business men will pay 50 cents additional for their telephones. Mr. Krauss said that this would enable the company to continue the residence telephones at $1.75 a month and also to continue the four-party lines.

Petition for Physical Connection at Owatonna, Minn.

The first application to compel the Northwestern Telephone Exchange Co. to allow the Tri-State Telephone & Telegraph Co. to make physical connection with the former's local exchanges, under the law passed by the last legislature, was filed August 10 with the Minnesota Railroad & Warehouse Commission.

The city council of Owatonna filed the petition. A resolution adopted by the council states the people of Owatonna cannot use a toll line out of that city on the Tri-State company's lines except by going to a pay station.

The Northwestern company operates both local lines in and toll lines out of that city. The commission is asked to issue an order to the Northwestern company to allow the connections to be made.

The commission has notified the Northwestern company of the receipt of the application, and has given it 20 days within which to acknowledge compliance with the order, or to file an answer setting forth objections.

Citizens of Miami, Fla., to Vote on Automatic Franchise.

The granting of a franchise to the automatic telephone interests will be up to the people of the city, as the use of the streets will be required, it was recently explained to the Miami, Fla., city council by City Attorney A. J. Rose and W. P. Smith, attorney for the telephone concern.

However, before the franchise goes to the people for ratification the council must carefully consider it and get the measure in proper shape for presenting to the electorate. To facilitate this a committee composed of Councilmen Ralston and Hefty, City Attorney Rose and the mayor was appointed to investigate the merits of the automatic telephone.

Commission Asked to Postpone Action on Franchise.

On account of the unsettled condition of municipal affairs, the Automatic Telephone Co., which applied to the city commission over three months ago for a franchise in Nashville, Tenn., has asked the present commission that action on the franchise be deferred for the present. The bill granting the franchise had passed two readings before the former commission, after which it had to lie over 90 days, according to law. This period will expire at an early meeting in September.

Telephone Company Must Stand Loss by Bad Coins.

Slugs and spurious coins used in the nickel-in-the-slot telephone machines throughout the city of Los Angeles must be the telephone company's loss, according to a recent decision of the California Public Utilities Commission. It was also ruled by the commission that all money taken in, over and

above the $5.50 telephone rate to be paid by the business concerns, must be divided.

This decision was precipitated by an effort on the part of the Pacific Telephone & Telegraph Co. to have business houses sign up contracts agreeing to make good the loss by bad coins.

Proposed Sale of Logansport, Ind., Company to City.

The Logansport Home Telephone Co., of Logansport, Ind., has submitted a proposition to the city council for the sale of its property to the city for $261,375. This is the appraised valuation put on the property two years ago by the public utilities commission. The city council will meet in caucus to consider the proposal of the telephone company.

California Railroad Commission to Fix Utility Rates.

Control of the rate-fixing functions of the Los Angeles board of public utilities, with power to fix rates for gas, telephone, water, power, light and transportation on street railways on August 6 passed to the California Railroad Commission.

This is effected by the new state law governing the fixing of rates for public utilities in all cities in the state, adopted by the people at the last state election.

Agreement in Baxter Springs, Kan., Mutual Case.

The Cherokee County Mutual Telephone Co. and the Baxter Springs Telephone Co., of Baxter Springs, Kan., have come to an agreement whereby the Mutual subscribers in Baxter will be admitted to the switchboard of the Baxter Springs company by paying 25 cents per month.

Summary of State Commission Hearings and Rulings.

ARIZONA.

September 15: Hearing in regard to complaints against the rates and charges of the Mountain States Telephone & Telegraph Co., in Tucson, Ariz.

September 22: Hearing in regard to complaints against the rates and charges of the Mountain States Telephone & Telegraph Co., in Flagstaff, Ariz.

CALIFORNIA.

August: Complaint filed by the city of San Francisco against the Pacific Telephone & Telegraph Co., charging that its rates are unreasonably high.

August: The commission ruled that bad coins deposited in telephone slot machines must be the company's loss and not the business concern on whose premises the instrument is installed. It was also ruled that all money taken in over and above the $5.50 telephone rate to be paid by the business concerns, must be divided. This ruling was the result of an effort on the part of the Pacific Telephone & Telegraph Co. to have the various business houses of Los Angeles sign contracts agreeing to make good the loss by bad coins.

INDIANA.

August 10: Physical connection ordered between exchanges of the Whitley County Telephone Co. and the Farmers' Mutual Telephone Co., of Whitley county, at Columbia City and vicinity.

MARYLAND.

September 8: Hearing on the investigation into the rates, rules and practices of the Chesapeake & Potomac Telephone Co. in the state of Maryland.

MICHIGAN.

September 1: Hearing in regard to objections to the proposed increase in rates in Detroit by the Michigan State Telephone Co.

MINNESOTA.

August 3: Petition filed by the Northwestern Telephone Exchange Co. for permission to decrease its rates at Brainerd, Minn., to meet competition. Rates of $1.75 for single line residence service; $1.50 for two-party residence service and $1 for four-party residence service are suggested in the petition. This action of the Northwestern company was the outcome of a recent ruling of the commission to the effect that the Minnesota Telephone Co. had a valid franchise for operating in Brainerd.

August 10: Petition filed by the Owatonna city council asking that an order be issued requiring the Northwestern Telephone Exchange Co. to make physical connection with the lines of the Tri-State Telephone & Telegraph Co. for toll service.

MISSOURI.

August: New schedule of rates for St. Louis, Mo., filed by the Southwestern Telegraph & Telephone Co., in accordance with the recent order of the commission. The company has on file a motion for a re-hearing of its rate case, but the commission has not indicated whether it will order the new schedule effective before it passes on the motion for a re-hearing.

NEBRASKA.

August: The commission has ordered a consolidation of the Kearney Telephone Co., at Kearney, Neb., and the exchange of the Nebraska Telephone Co., at Kearney, Neb. The Nebraska company is given 40 days within which to report terms for approval to the commission.

September 6: Hearing on application of the Lincoln Telephone & Telegraph Co. for permission to cancel rates for grounded service and to increase rates for metallic service.

NEW YORK.

August 11: Decision rendered on complaint of the board of supervisors of Orleans county and the trustees of the village of Albion against the New York Telephone Co., as to increase of rates. After making a careful study of the inventory and appraisal and the figures for the business done in the area affected, the commission finds that the increase whereby two-party business lines were raised from $24 to $30 per annum and four-party residence service from $12 to $15 per annum, is justified.

OHIO.

September 8: Hearing in regard to the complaint of Wm. A. Shafer asking that the Cincinnati & Suburban Bell Telephone Co. be compelled to connect with the Hamilton (Ohio) Home Telephone Co. for the purpose of giving toll service to Cincinnati.

OKLAHOMA.

August 14: Hearing on complaint of Mayor Val Mullen, of Ardmore, Okla., charging the Pioneer Telephone & Telegraph Co. with rendering faulty service, notwithstanding the installation of a complete new system a little over a year ago. An order is asked compelling the Pioneer company to have calls answered more promptly, prevent cross talk and give generally improved service.

PENNSYLVANIA.

August: The contract between the Central District Telephone Co. and the Borough of Hays, Allegheny county, for the construction of an underground system, has been approved by the commission.

August: The application of the Central District Telephone Co. for the approval of sale of plant in Somerset county to the Pittsburgh, Westmoreland & Somerset Railroad Co. has been granted.

WEST VIRGINIA.

August 17: Hearing at Charleston to discuss telephone service, more especially an interlocking service throughout the state, to which representatives of all the boards of trade and chambers of commerce of the state, together with representatives of the telephone companies of the state, have been invited.

WISCONSIN.

August 13: Hearing at Madison on application of the Northfield Farmers' Telephone Co. for permission to increase its rates from 75 cents to $1 per month.

WYOMING.

August: Mountain Valley Co-operative Telephone Co., of Sundance, granted a certificate of convenience and necessity for the construction of a line between Farrell and Sundance, in Crook county, a distance of 25 miles. Exchange service will be maintained in Sundance.

August: Application filed by Ben C. Noble to construct and maintain a rural telephone line from Coorcroft to Sundance, paralleling the line of the Belle Fourche & Northern Telephone Co. The commission issued an order giving the Belle Fourche company until November 15 in which to place its line in good condition and to give better service to its patrons. In case the company fails to respond to this in time allowed, a certificate of convenience and necessity will be issued to Noble, provided all other requirements of the law are observed.

August: Application filed by the Mountain States Telephone & Telegraph Co. for permission to place an extension telephone, free of charge, in the office of the receiver of the general land office in Cheyenne, in the federal building. Upon an order of the commission, Secretary Floyd was instructed to investigate conditions under which similar telephones were installed in the offices of the registrar of the land office and the postmaster, and to report at a later meeting.

Construction of Cords and Plugs—How to Handle Them

Construction of Standard Forms of Plugs and Cords—Some Do's and Don'ts to be Observed in Their Proper Handling in Making Connections—Paper Presented at Annual Get-Together Meeting of Employes of the Citizens Telephone Co., Pekin, Ill.

By H. F. Cox

At present, the clearly defined trend of telephone engineering is along lines which cast the duties of the operators as nearly as possible in the same mould, for each call handled. This is done by relieving them, by mechanical devices, of duties which are exactly alike for each call handled, and which do not in themselves contribute in any way to the efficiency of the service furnished the public.

The logical result of this development is, of course, to reduce the number of operators required, inasmuch as the operating effort per call is greatly decreased. By the same course of reasoning it is clear that another effect would be to impose a greater duty on the switchboard equipment used, as there should be less equipment handled by the operators due to the reduced number of operators' positions required.

Plugs, cords and jacks all perform greatly increased service by working at increased efficiency. In other words, the switchboards of today are equipped with about one-half as many sets of cords and plugs as required in old types of boards to answer and complete the same number of calls.

Construction of Switchboard Plugs.

The standard forms of switchboard plugs,—the plugs used by operating companies today—are of the same general construction. Different manufacturers may vary their forms of plugs as to size and shape, but they all use practically the same material—brass, steel and hard rubber—and they are formed by a similar process. I will say, however, that the plug has always been a more or less unsatisfactory piece of apparatus. Necessarily of small dimensions and numerous parts, it requires the most delicate mechanical operation in manufacturing.

The material used for insulation, ordinary hard rubber, is not of great mechanical strength in itself, and is particularly delicate when cut into tubes of a thin fragile design. The metal parts of the plug, when assembled with the rubber insulation, are held in place by small screws requiring very delicate and minute bushing, washers and flat insulating pieces.

Plugs are subject to bending, breaking, failure of insulation, and excessive wear on exposed parts of the insulation. The insulation that separates the tip and sleeve is very often broken by careless handling. I have also known the tip of the plug to be broken off by carelessness. Since the plug is a delicate constructed piece of apparatus, it should be handled with more care than the average operator handles it with.

So much for the construction of the plug. The plug is of no use until attached to the end of a cord. We shall, therefore, take up the construction of the switchboard cord next.

Development of Cords Now in Use.

Switchboard cords were at one time, one of the greatest problems in connection with the telephone business. The cords of former days, and the same constructed cords being used by some companies today, were all made of fine copper tinsel in order to secure the necessary degree of flexibility. These cords were well covered with several braids of cotton or linen to carry the strain, insulate the conductors, and protect them from breakage and injury.

It was found, however, that no matter how tightly the protecting cover might be woven, it would stretch with use and allow the strain to be taken by the tinsel conductors. This would gradually break away at the weakest point, which was close up to the plug where the cord had been subject to frequent bending. After becoming broken, the several ends of the tinsel conductors would still touch each other loosely, resulting in a scratchy, stuttering, choppy cord.

The first attempt to get away from this cord was by the use of a cord in which two conductors of steel piano wire were coiled like a spring and arranged concentric or in parallel, no tinsel being used. The idea was that these coil steel conductors would stretch out without breaking as the cord braid became old and worn, thus insuring a reliable conductor. Experience soon pointed out one fatal drawback to this scheme, in the form of high resistance offered to the talking current by the highly tempered steel wire. After trying out several designs, it was found that an almost perfect cord could be produced by using steel wire wound over braided tinsel, the steel being practically unbreakable while the presence of the copper tinsel insured the lowest resistance to the talking currents. Thus a cord was secured which was capable of giving reliable service, without any attention, until the outer braid had become worn through and started to ravel or fray back.

Experience had proven that the outer braid gave way because of rotting of the fabric caused by the cord becoming saturated with perspiration from the operators' hands. This has been overcome to some extent by treating the outer layer of the cord with a compound that works down into a glazed moisture-proof coating, leaving the cord perfectly flexible, but increasing the life of the outer braid. Many attempts have been made to secure a moisture-proof cord by boiling the entire cord in wax, but this only caused the cord to ooze grease over everything in hot weather and render them stiff and unwieldy for use at ordinary temperature.

Thus most all operating companies are now using a cord of the same general construction, known as the steel spiral cord. In this steel spiral cord there is a single conductor at the center, then a layer of insulation and next the inner conductor of round spiral steel. Next is a braiding of tussah silk, then a cotton braiding and lastly a linen braid.

The cord has a strong reinforcement running from 12 to 16 inches from the plug end, and consisting of another braiding of linen, the outer layer being treated with a compound. The tinsel in connection with the steel spiral is used to cut down and equalize the resistance of the steel conductors. In other words, the tinsel is to reduce the resistance of the talking currents, while the steel spiral is to make the cord strong and durable. So much for the construction of the switchboard plug and cord. The manufacturers and engineers have done their part.

The plug and cord may be installed in a switchboard, but they will be of no use unless we place operators at each position for the purpose of using them. The engineers and designers have experimented with, and have tried to overcome all the weak points in the construction of, switchboard plugs and cords. They have put on the market an article that is almost perfect, but how long it will last and give service depends, to a great extent, upon how the cords are handled by the operators.

Proper Handling of Cords.

There are a number of rules for the proper handling of cords, which will increase the speed of the operator and at the same time not injure the cord. For instance, when answering a call or making a connection to the right of an operator's position, the cord should always be handled with the right hand. When to the left it should always be handled with the left

hand. When an operator uses the left hand to connect to the right, or vice versa, she not only works slowly on account of an awkward position, but frequently interferes with the neighboring operators who are reaching to establish a connection.

When putting up a connection or taking one down, the operator should be very careful to do so by taking hold of the plugs and not the cords. The plugs are so constructed that when an operator pushes the plug or disconnects it by taking hold of the cord several inches from the plug, then jerking it out, the fine wire tinsel running through it is broken, and the cord cannot be used until several inches of it have been cut off and the plug again connected to it. Besides the extra work of repairing the cord, it is made shorter and soon is too short for use. This means new cords must be purchased which adds much to the expenses of the company. Never use the thumb or palm of the hand to drive the cord home. This bends the cord at a short angle and soon renders it noisy or useless. Grasp the plug firmly by the shell and retain this hold until the plug is entirely inserted in the jack. In removing a plug, grasp in the same manner, for pulling down plugs by the cords also breaks the conductors.

Disadvantage of Some Rules in Practice.

There is one rule that is being enforced by some companies, and I don't know but what it is being observed in our operating room here at Pekin. Nevertheless, I shall take exceptions to the rule and give my reasons for so doing. The rule reads like this: "Operators when not busy, should at all times have key open and plug in her hand so as to be able to answer calls more promptly."

In the first place I don't think this rule is practical. It is impossible for me to figure out any great amount of time gained by so doing. The time gained might possibly be one second per call, providing the call would come in, in a convenient place to use the cord she had picked up. Should the operator be holding the cord in her right hand and the call comes in to her left, it would be necessary for her to change the cord from her right to her left hand. You may say that it is not necessary to change hands to answer the call. Then you have conflict with the first rule, which reads: "When answering a call or making a connection to the right, it should always be handled with the right hand and when to the left should always be handled with the left hand." In the second place, should she be holding the cord in her right hand from near the middle of her position while she has a number of connections up to her left, and a call comes in to the left, she is compelled to bring the cord in her hand back of, and around the other connections, thereby tying them in, to a certain extent. I should consider it more proper for an operator to use the cord directly under, or as nearly under as possible, the call to be answered, which would be impossible about nine times out of every ten were she to have the cord already in her hand.

My third objection is that an operator will let loose of the cord and let it fall back in place to take down connections or pick up a plug that she might answer a call more conveniently with or change from left to right or from right to left, about eight out of every ten times. In other words, out of every ten times an operator picks up a cord and waits for a call to be answered with it, she will use the cord twice as was her intentions when she picked it up. You may say the operator shouldn't let loose of the cord. She will either have to let go of the cord or change hands, for it is impossible, as well as awkward, for an operator to take down cords on the operator's position to her right, which she frequently has to do, with her left hand.

But for the sake of argument, we will say that the operator will use the cord 50 per cent. of the number of times she picks it up, as were her intentions, that is, if she does not have to change hands and the calls come in in a convenient place to be answered with the cord she is holding in her hand. We will say she has increased the speed of each call answered with these plugs one second each, which is a very small item, as the automatic people only claim to complete a call in eight seconds. But we will say that on 50 per cent. of the calls, she has increased the speed one second per call. Is that one second of time justified by the wear and tear on the cord? For instance, an operator's hand will perspire, especially in warm weather. While the operator is holding the cord in her perspiring hand, it will naturally absorb more or less of the moisture or perspiration, especially after the cord has become worn and stretched, thereby rotting the braid which will cause it to fray. Not only the perspiration will do the cord an injury, but an operator that is sitting holding a cord with nothing to do will bend the cord, flip and twist the plug around, which all helps to destroy the life and service of it.

I saw an account in a paper the other day where a company claims to have installed its switchboard with cords and that they have lasted four years with but two cut backs. I would like to find out the kind of cords that company uses or the method used in getting its operators to handle the cords. Should the Citizens company, of Pekin, be able to adopt a cord or a method for handling that would enable it to use a cord four years it would be a great saving to the company.

I kept a record of the cords repaired on the local board for the months of January, February and March. For the three months I cut back 187 that were frayed or ragged, 12 that were open and short, making a total of 199 out of 186, not saying anything about new cords that were used, the old ones being beyond repair.

Operators, I am not telling you not to hold the cords in your hands with your switches open, as that does not come under my jurisdiction. If your chief operator tells you to do so, do it. You are expected to take your orders from her, as the company holds her responsible for the service rendered by you.

The Chief Operator's Duties.

Before we pass the subject of handling cords, I wish to say a word or two to the chief operator. It is your duty as chief operator to see that the operators handle the cords as the manager wants them handled. I noticed a report that came out some time ago that read like this: Operator's name—"Miss B. Handled cords O.K.," all down the line, especially the day operators. The report sounded good and looked good on paper, but the switchboard cord tells a different story. I have been in the operating room time and time again, and I must say that I have never been in there for any length of time but that I have noticed operators pulling down connections by the cords, starting the plug in the jack and giving it a hit with the palm of the hand to drive it clear in, or twisting or flipping the plug around. I don't say that you are doing this all the time, but you are doing it more or less, perhaps thoughtlessly. You know that is not the proper way to handle the cords, and the chief operator knows it. Whenever I see an O.K. on anything, I always consider or understand it to be all right, or correct. I do not consider the way just mentioned the correct way of handling cord, and, therefore, hardly think I should have given you an O.K. on the way you handle the cords.

Completing a Connection.

Before I finish I wish to add a word in regards to completing a connection. After you have inserted your answering plug, wait till you receive the number wanted before picking up the calling plug, as you don't know whether the call will be to the right or to your left. After receiving the number wanted by the subscriber, if the number wanted be to your left, pick up the cord with your left hand and insert it in the jack wanted. Don't pick up the plug with the right hand and look through all the numbers to the right and then, not finding it to the right,

change to the left hand and look till you find the number you want, as I have noticed some of you do. In the first place, an operator should know the position or location of every jack and number within her reach. The instant you receive the number wanted by the subscriber, you should make up your mind the location of the jack and pick up the cord accordingly. Make your brain work as well as your hands. I dare say if you will train your brain you will make more efficient operators. At the conference of musicians held in Dublin some time ago it was learned or shown that an ordinary piano player must cultivate the eye to see 1,500 signs per minute, the fingers to make about 2,000 movements, and the brain to perceive the 1,500 while issuing 2,000 orders. Quite astonishing is the rapidity of the working of brain and nerves. But I will say the brain has to be trained.

Surely an operator does not have to perceive 1,500 signs nor execute 2,000 movements per minute to tax her brain to the capacity of a pianist. But I will venture to say there is not an operator here but who could learn to play the piano with practice and instruction, providing you use your brain.

So, in closing, I will say to you operators, use your brains to relieve your hands of some of the work, and you will find your work to be much easier and a pleasure.

War Dramas in Which the Telephone Plays Leading Role.

Some interesting accounts of war dramas in which the telephone played leading roles were given to TELEPHONY'S London correspondent in a chat with a British army service corps worker home on four days leave from France. The soldier had been in the Mons, Neuve Chapelle, Ypres and other big battles. It was near La Basse that the shepherd-telephoneman was discovered.

"We noticed him every morning," said the army man. "Sometimes he drove two sheep; sometimes three, four, five or a dozen sheep. Then we tumbled to his game. From a German observation balloon, his flocks were carefully watched. If he drove three sheep to the hills the Germans understood we had three battalions preparing for a rush; if twelve sheep, twelve battalions, and so on. We shot him immediately. Around his stomach we found a thousand yards of telephone wire."

"Our next experience with one of these gentry was, I'm sorry to say, with a Frenchman. He had a barber shop and was doing a nice business with us between times. Then by an accident we stumbled on to his scheming. We found telephone wires running from the cellar of his shop to the German trenches quite a long distance away. Our innocent barber shop gossip made nice news for the enemy. We disposed of this barber as soon as his guilt was proved. He had installed an elaborate telephone outfit underground and doubtless was being paid handsomely for his work."

Amarillo, Texas, Reports Big Increase in Subscribers.

The Amarillo Telephone Co., of Amarillo, Texas, has installed more new telephones in that city in the last three months than in any other similar period since the company came under its present management, according to J. P. Goodman, one of the officials of the company. It now operates 1,983 lines in Amarillo and expects the number to be in excess of 2,000 by the end of the present month. Fifty-eight new telephones have been put in since May 1. Of the telephones now in operation, 1,734 serve parties within the city limits, while the others are on rural lines.

Telephone Lines Protect Forest from Fire.

With the completion of a telephone line from the Red Lodge creek ranger station to the East Rosebud ranger station, the Beartooth national forest will have one of the most complete and efficient fire prevention systems of any district of the United States forestry department, according to R. T. Ferguson, of Billings, Mont., supervisor of the forest. The line will be completed by August 30.

It will extend for about seven miles, and, with other lines already in, will make possible immediate communication with any part of the forest, or with the headquarters in Billings. The Rosebud station is about ten miles north of East Rosebud Lake.

The fire guard at the Rosebud station will keep in constant touch with the actions of campers in the district and will be in position to report immediately any signs of fire.

West Virginia Commission Discusses Mergers.

A general conference of the telephone companies and the West Virginia Public Service Commission was held at Charleston, W. Va., on August 17 with the view, on the part of the commission, of familiarizing itself with the telephone business before taking up the question of mergers and the various complaints against telephone service in the state and the drafting of rules governing telephone companies.

The feature of the meeting, however, was the proposed merger by the Bell system and the Consolidated Telephone Co., a strong competitor of the Bell in the northern and central portions of the state.

T. P. Sylvan, assistant to the president of the Bell company, in reply to a question from Chairman Northcott, admitted that the Bell company was now the owner of the Consolidated Telephone Co., but added that the transfer of property had not yet been made.

Resolutions for and against the consolidation of the two big companies were made. The Wheeling board of trade presented a resolution favoring the merger, as did Fairmont and other points, while the Parkersburg chamber of commerce asked the commission to prohibit the merger and permit competition.

Much interesting data was given the commission by N. Hayward of Philadelphia, engineer of the Central District Telephone Co., and by Mr. Sylvan, who refuted the idea that the big telephone companies did not want connections with the rural lines. He insisted that telephone companies be not required to connect with hotels and business houses that installed their own intercommunicating systems. He also urged the commission to adopt rules along the lines adopted by the Wisconsin Railroad commission.

W. C. Handlan of Wheeling represented the Consolidated company, and W. O. Hardman, of Sistersville, the Inland Telephone Co.

The commission will take up the question of permitting the merger of the Bell and Consolidated companies at a later date.

New Toll Line Between New Castle and New Wilmington.

The Union Telephone Co. of Erie, Pa., is erecting a new toll circuit between New Castle and New Wilmington. The Union company will, when this line is completed, have three circuits between New Castle and New Wilmington, as well as access to the New Wilmington district by way of Volant and by another direct line from Mercer, Sharon and West Middlesex.

It means practically also added facilities for the Independent system between all points along the Shenango Valley in western Pennsylvania.

Physical Connection Ordered at Columbia City, Ind.

The Indiana Public Service Commission, on August 10, ordered a physical connection between the exchanges of the Whitley County Telephone Co. and the Farmers' Mutual Telephone Co., of Whitley county, at Columbia City and vicinity. No change is to be made in the rates of either company.

Practical Subjects—Letters and Discussions

A System for Code Ringing.

I have been interested in the reports of the different companies of their code ringing and suppose that every manager believes his system is the best.

I became dissatisfied with the use of letters, especially when many had to be used, as there are several which it is difficult, if not impossible, to distinguish between. I arranged a plan to use all figures and it is very satisfactory. I use eight figures 1, 2, 3, 4, 5, 6, 7 and 8. They represent rings as follows:

Figure one means one short ring. Figure two means two short rings. Figure three is three short rings. Figure 4 is one short and long. Figure 5 is one long and short. Figure 6 is one long ring. Figure 7 is two long rings and figure 8 is one long and two short rings:

1	2	3	4	5	6	7	8
–	– –	– – –	–	—			—
			—	–	—	— —	– –

The last two figures in every number in the directory number is the ring. The figures preceding denote the line number; that is, if the number is 1211 one would put the plug in jack No. 12 and give two short rings. If the number were 7918, the plug would be inserted in jack 79 and one short, one long and two short rings given. If the number is 9813, jack 98 would be plugged into and four short rings given. An almost endless combination of rings and more than ever should be on one line, may be made.

The advantage of this system is that a new operator can learn the eight figures in an hour and then sit down to the switchboard and answer calls.

S. A. Price, Manager,
Dundee, N. Y. Dundee Telephone & Telegraph Co.

Hauling Poles in North Dakota.

I have enclosed a postal card of my automobile (the North Dakota Independent Telephone Co.) showing the way we haul poles up here in North Dakota. I have fourteen 25-foot poles on this load and hauled them nine miles

Load of 25-ft. Poles Ready to be Hauled Out Into the Country.

out in the country. We find the use of the automobile a great saving where we have such a long haul to make.

Hope, N. D. G. W. Kotts.

Pruning and Trimming Trees.

On page 21 TELEPHONY of August 14, I have just read the splendid article by W. W. Kinsley, Jr., on "Right and Wrong Methods of Pruning and Trimming Trees." As this was published just at a time when we are engaged in that class of work this article will be called to the attention of our men in this department, with instructions to follow it to the letter with one exception. That is the correct method of attaching guy wires to trees, as per Mr. Kinsley's Fig. 5, which indicates two turns around the tree, protected with wood strips.

The wood strips are a splendid idea when necessary to attach guys to trees, but experience has taught us in this section that the double turn around the tree has a tendency to "choke" the tree. It is easy to see that the more strain on the wire the less chance the tree has to grow. Hence within a few years the tree dies. In many cases telephone companies are sued for the price and value of the tree before it was killed by the wire.

For several years we have been using the strips, but only take one turn around the tree. I cannot recall any instance where the tree has been damaged when attached in this manner.

J. J. Veatch, District Manager,
Paris, Ky. Central Home Telephone & Telegraph Co.

Cite Facts to Advertise Toll Service.

C. A. McMullin, of Adams, Ind., spent half a day and $4.75 in tolls, and sold 1,600 bushels of oats, using the telephone only. To have done the same work by mail, if it had been possible to close the deal, would have taken two days. To have made personal calls would have taken much longer and been much more expensive.

In every community there ought to be instances of this kind which could be used to advertise toll service. For making sales quickly toll service can't be beat. It has the telegraph blinked into obscurity, and every other sales method beat, as well.

Most toll advertisers think they have made the public acquainted with this fact. But have they? The public is satiated to death with assertions. An assertion has force, but it must be dinned incessantly to beat down the natural mental resistance to it. But start talking facts and your advertising is read like the newspaper account of the latest German note. Facts challenge investigation, and mental resistance melts before them. If you want your public to believe that toll lines are a great sales force, take the trouble to ascertain the facts as they have been found in the case of C. A. McMullin, of Adams, Ind., and then print them. Don't say that toll use will save money and increase sales. That is merely an assertion. Cite the facts. An Indiana Operator.

A Rural Switching Question.

I have been in the telephone business for only four years, but think I have had some experience with rural lines.

Our rate has been $1.50 per station per year for switching. Last year we applied to the commission for permission to change this rate to $4 with 25 cents discount per quarter, if paid quarterly in advance. The commission granted our petition. When we notified the rural people, there was something doing at once. There were 189 rural service subscribers and they appointed delegates from each line to decide what they would do.

They invited us to their first meeting. We attended, and offered to let a disinterested party invoice our plant and take what he said it was worth, but from some cause it did not look good to them. They finally drew up a petition and presented it to the commission, asking it to rehear the case so they could present their side. The commission finally set a date for a rehearing. After it had heard the case the second time, it granted our petition again. Now comes the joke.

After petitioning the commsision to rehear the case and virtually saying by their actions that they would abide by the decision, nearly all of the rural subscribers cut loose from our board when the case went against them. They thought such action would cause all our subscribers to quit, but it did not work. Then they went to the business men among our subscribers and threatened to boycott the town if they did not have their telephones taken out.

We have not lost very many subscribers yet, and we think there are several rural subscribers who would like to be back on our board, but the hot-heads are holding them off. They quit the first of July. At that time I did not think they would stand it more than 90 days, and right now it doesn't look as if they would stand it that long, but a person can never tell.

Now what to do with a bunch of people like this is beyond me, as they say they do not mind the raise in rates. They say they do not like the way we went at it, and that we should have gone to them first and asked their permission to increase our rate. Three years ago we asked them for a 50-cent raise per year and they not only refused to pay it but laughed at us for asking a raise.

Now here is another joke: While we are the sole owners of this telephone plant, we were born and raised on the farm and we still live on the farm; also we are a rural subscriber of this telephone plant.

Illinois. A. B. Ginning.

Overheard By a Little Bird in a Telephone Office.

Good morning, Mr. Telephone Manager."

"Say, can't you get my neighbor, Mr. Jones, to put in a telephone so his wife will let up bothering us? Of course, she is a good neighbor and we like to accommodate her in all ways, but I do wish she had a telephone. You see it has become such a habit for her to use our telephone that she runs in any old time without stopping to knock. Of course no family can have their home and themselves presentable to visitors from 6 a. m. till 10 p. m. and I believe she has been telling about some things she has seen. Then we are annoyed in another way. She must belong to about all the churches and lodges and societies in town, for my wife has to drop her work a good many times each day to comply with the politely spoken request over the wire: 'Won't you please call Mrs. Jones to the telephone?'"

"Now, don't mention my name in connection with my suggestion, as I don't want to make them mad. But I do wish you could induce them to put in a telephone."

"All right, Mr. Smith," said Mr. Telephone Manager, "we will send our solicitor to Mr. Jones again and see what we can do, although he has told me several times he would put in a telephone if he had any use for it."

Resourcefulness of Operators.

I was never so much struck with the value of operators being able to meet new conditions as I was recently. Two new operators, apparently as bright as the ordinary, were working Sunday afternoon, with only the toll and No. 1 positions in use, when the girl at position No. 1 got to playing with the master ringing key and left it half over, so she could not ring anybody on that position.

Presently a subscriber called in and was told that the operator could not ring anyone. He called for me and, of course, my bell did not ring. He then asked her to send a messenger, but she could not ring the messenger. Then she was asked to go to my home, a block away. She could not do that, because the rules said she could not leave the board without permission.

All this time the toll position and the other positions were ringing all right, but neither girl thought about that. The switchboard man happened to step in at this time and you can imagine what he told the girls.

Neither one could make good.

A week ago the cord on a board in one of our small towns went bad. The operator found an old receiver and connected it with a jumper wire to the rack. Then she put a plug in that line and by keeping her key over on that plug, used that receiver until Monday. This surely shows resourcefulness that the other operators did not have.

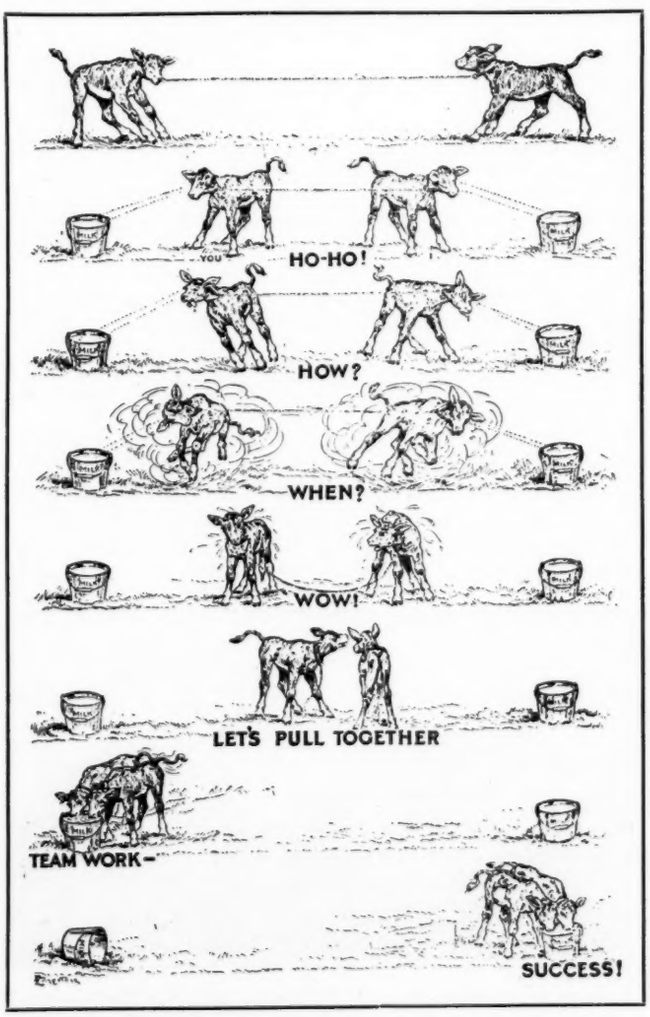
Iowa Reader.

Cyclists Object to Elimination of Telephone Poles.

British cyclists are deploring the tendency on the part of the post office authorities to place telephone wires underground. They say the telephone poles of the country roads are a natural part of the landscape, giving a picturesque touch that will be entirely lost with the advent of the underground system in its entirety. The cyclists say the poles break the monotony of a long run, besides forming impromptu back rests for the tired tripper taking a "breather" on the roadside.

Co-Operation.

Co-operation is a great thing as through it many things may be easily accomplished which otherwise might be difficult or impossible. The value of co-operation is graphically shown



Armour & Co.'s Striking Illustration on Co-Operation.

by a drawing for which Armour & Co. are responsible. Telephone men are greatly interested in co-operation and for that reason the drawing is reproduced in TELEPHONY. It shows very clearly, indeed, what may be done through co-operation. This definition of co-operation is also given:

"Co-operation means giving a little assistance to some one; going a little out of your way to accommodate some one; tactfully helping the other fellow—it means teamwork."

Department Store Telephone Service.

Indifferent telephone service can drive away as much trade as a poor delivery system. But, properly operated, says an article in The Department Store, published in New York City, it may well develop into one of the most potent agencies for finding new customers and holding old friends.

The argument that encouraging patrons to telephone orders is bad policy because it prevents their coming into the store and falling under the spell of displays of goods which may lead to chance purchases has no real bearing on the case. Even if this objection were well taken the department store man could not use it long. All over the country the telephone companies are making aggressive efforts to get the small specialty shops to extend their facilities for telephone orders. Not only this, they are persuading these minor merchants to solicit orders by wire. The department store, large or small, is in competition with these shops, and must follow suit.

No two cities or towns are alike, and it is impossible to outline a telephone campaign that will fit every case. But there are general principles that can be applied everywhere. The details must be worked out after a special survey and analysis of local conditions, just as one does in planning advertising. There are three questions to be answered when entering this field:

How can I respond to every call quickly?

How can I make my telephone system make up in new business what it may keep from my store by diminishing chance sales to those who use the wire instead of visiting in person?

What effect will it have on my credit system?

The instantaneous reply is the very first requisite of success with telephone trade. There must not be a moment's delay between the customer's "hello" and the salesman's rejoinder.

A customer will often wait patiently for several minutes before a counter. There is so much to engage her attention that the time passes swiftly. Not so, however, while she waits at the telephone. She is soon out of sorts if she is not answered promptly.

Confusion is the greatest menace to telephone trade. Be sure your system never gets tangled. The sales force must be organized in each department so that the telephone never rings once without a reply. Then the receiver must never be hung up until the patron has been satisfied. If by some error she has been switched into the wrong department care must be taken that she is put on the right line.

The clerk who snaps "Wrong department" and hangs up, has committed a serious offense. She might as well leap over the counter and stuff a gag down a purchaser's throat. Let the clerk say, "I am sorry. This is not the right department. I will have you connected," and then make good by getting the exchange and helping the customer to become connected with the proper department. With the right kind of an exchange—and this should be the first consideration in putting in a service—such errors will not occur often.

"What do you regard as the most important factor in building up telephone trade?" an executive of a big telephone company was asked.

His reply was, "Courtesy! Courtesy! Courtesy!"

It is easier to lose a sale over the wire than over the counter. In some cases a snappish reply, a slight delay, a small inattention, will irritate the customer and "click!" goes her receiver. She has cut off. You do not know her name. You cannot apologize. There is no way to "smooth things over." The sale is lost forever and perhaps a good friend of the store has been alienated.

The placing of the receiving instruments is a problem in itself. It is best to put one clerk in charge of all telephone orders, but it is not always possible to confine the work to an individual or a group. Many customers have favorites, from whom they always buy.

"I wish to speak to Miss Jenkins," says the patron.

"I am the telephone clerk, you must give your order to me."

Can you picture any woman allowing herself to be dictated to in this manner? If she did not "hang up" at once, she would demand a conversation with the manager and enough confusion and ill-feeling would be developed in the next few minutes to rout the smoothest "trouble fixer" in the store. If a patron wants Miss Jenkins try to get Miss Jenkins for her. But don't try long. If Miss Jenkins is busy get back on the wire quick.

"I am sorry, Miss Jenkins is not here at present. May I serve you?"

Such treatment will usually result in an immediate order.

As the telephone trade develops, however, it will be necessary to have salespeople who will devote all or the larger part of their time to it. Satisfactory telephone clerks cannot be picked out at random. They must be especially fitted for the work. Much the same qualities that are sought in applicants for places in the big exchanges must be possessed by anyone who aims to sell goods over the wire. A good telephone clerk must be alert, keen-sensed and quick, but able to remain calm, no matter what irritation a patron may show. Again let us emphasize the extraordinary "touchiness" of people while at the telephone. Under no other conditions are calmness and patience more necessary to the store employe. A nervous clerk, when things go wrong at the exchange, will often spoil a prospective sale by her misguided efforts to straighten out the tangle by "calling down the central."

The ideal telephone order clerk has a clear, soft voice—a "voice with a smile." Her enunciation of words must be faultless and her hearing should be tested by a physician. She must be able to write legibly and rapidly the orders as they come to her. Her memory must be capable of retaining many details of stock and delivery so that she can instantly reply to a patron's question without leaving the instrument to inquire of someone else. Employes should be warned against keeping a line open any longer than is absolutely necessary. Every second that the receiver is off the hook unnecessarily may mean the barring out of some patron who is trying to reach the department. For the same reason, clerks should be drilled in the use of polite, but exceedingly terse sentences for routine business. Every word that is eliminated is a second saved for the system.

The receiving instruments themselves should be very carefully placed in the departments. Do not plant them where they will have to be shifted about when goods are being shown over the counter. They will interfere with the regular sales and the constant knocking about will keep them in a state of disrepair, perhaps impairing the service. Have plenty of them, and have them set solidly on their own shelves or stands. Every enforced repetition discounts efficiency. Therefore, have the instrument placed so that noise and movement can be minimized.

Make every clerk understand the importance of getting the caller's name and address as early in the conversation as possible. Often the line will be opened with the remark, "This is Mrs. Jones." If the clerk requests the initials immediately the full name and address will usually be given without more ado. This seems too elementary to be worth mentioning. But investigations have shown that clerks often forget to ask this most essential question, especially while telephone selling is still new to them. It is also well to take the customer's telephone number, except in the case of well known patrons—then it is often unwise to ask questions that imply that one does not know all about the customer without being told. However, having the number on each order slip will often save time if it is necessary to call the patron back. The best way to greet a telephone customer is by a simple announcement of the department. Do not say "Yes, this is the upholstery department." "Upholstery," is sufficient and is just as polite.

From Factory and Salesroom

Convention: Indiana Independent Telephone Association, Indianapolis, September 15 and 16

The No. 318 Simplex Pole Jack.

Telephone and telegraph companies, especially those operating in the larger cities, frequently have occasion to remove poles from one location to another or to take them out entirely. The removal of the poles is by no means an easy job, as it requires considerable time in addition to a number of men.

The Simplex Pole Jack.

There has recently been placed on the market a device known as the No. 318 Simplex pole jack which has been especially devised for the purpose of removing poles.

The Simplex pole jack is of especial interest to telephone and telegraph construction departments. It is said to supersede, in effort, time and expense, any former means of pulling a pole and eliminates the necessity of digging around the pole.

In the series of progressive photographs reproduced in the accompany illustration, the pole was about five feet in the ground, had a big butt and had been embedded, solid, for years. It took just nineteen minutes for the Simplex jack to pull it straight from the earth—with no preliminary digging around the pole. The time necessary, by former methods of digging first and operating with roller and rope would have approximated an hour and a half. Hence as a labor-saving device the tool should quickly pay for itself through the saving in time to the entire pole crew.

The No. 318 pole jack is single acting, operating on the down stroke of the lever or tripping at any point. In this way, at the end of its entire lift the cap may be dropped back to take a new hold on the pole. The capacity is 15 tons, lift 24 inches and height 39 inches. It pivots on its own base from 30 to 90 degrees to the horizontal and follows the angle of the pole being pulled.

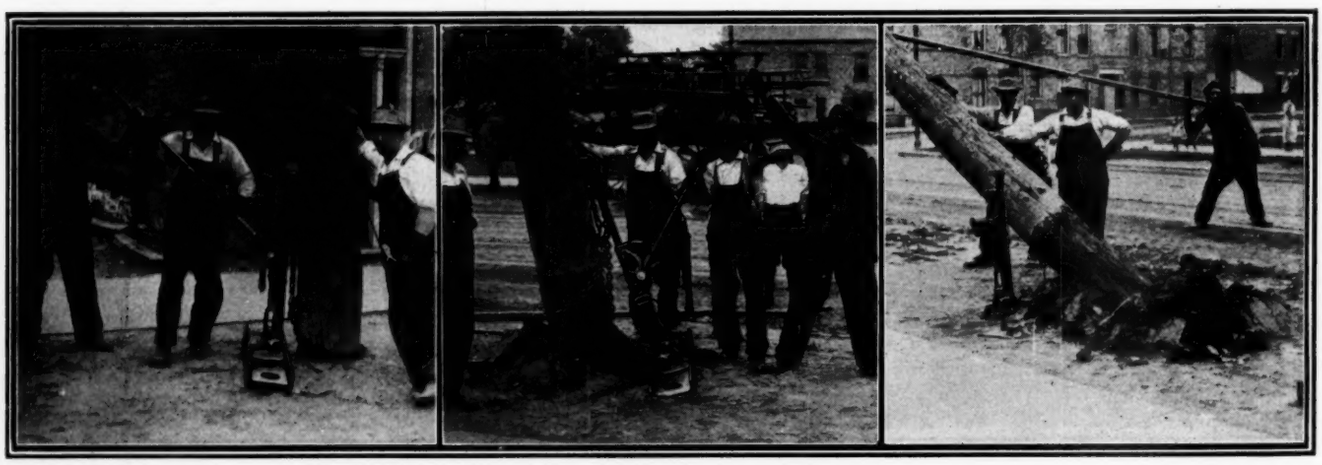
The cap is recessed to firmly hold the links of a chain when they are dropped in position. This chain, with grab hook attached, furnished with the jack, is of sufficient length to wrap once around the average pole. An I-beam base support acts as a substantial foundation where the ground is soft or hollowed. The standard is a heavy malleable casting. All other parts are drop forgings. The double lever socket insures a convenient position of the lever bar with the jack at any angle. A five-foot steel lever bar of pinch bar construction also forms a part of the equipment.

This jack is manufactured by Templeton, Kenly & Co., Chicago.

The New Yesbera Booth.

Among the first to require a type of door different from the usual swing door for telephone booths was the hotel. Economy of space, and in a great many instances narrow passageways called for a booth that required little more room than was actually used by the body of the booth itself. A rather crude and troublesome method of operation was the receding or disappearing door which was swung partly out and pushed into the side of the body.

Ventilation, too, was never properly taken care of by suction fan or other devices. To leave the swing door open was impossible in most every case, and to find a person not in the habit of closing doors after him was still more impossible. Where two or more booths were placed together, open doors interfered with adjacent booths, and in many instances marred the finish. Eventually, several types of the folding door were



Operation of the Simplex Pole Jack in Pulling a Pole—Pole Pulled in 19 Minutes.

evolved and from time to time improved until perfection; it is claimed, has been obtained in the Yesbera booth, shown in the accompanying illustrations.

The most important feature of this new booth is its simplicity of operation. By much experimenting and practical ex-

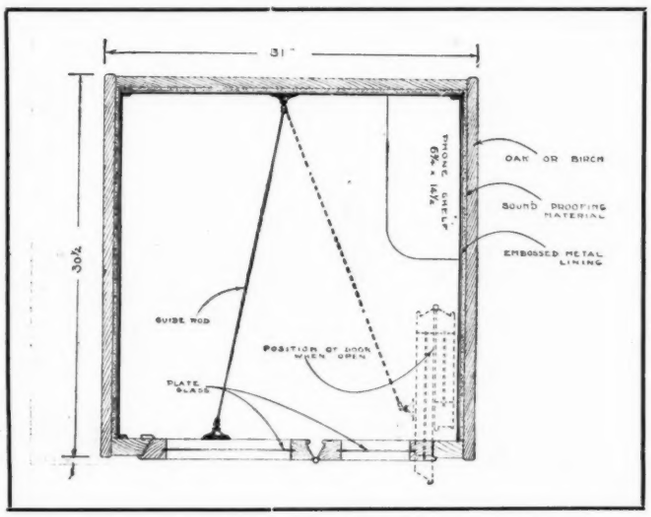


Diagram of Floor Plan of New Yesbera Booth.

perience many working parts have been eliminated until perfect operation has been secured with less hardware than is used on any other type of booth. There are no tracks overhead or in the floor, there being used only a guiding device consisting of a swinging rod which guides the door in the proper arc. Hinges of special design complete the working parts with exception of a securing plate at the top and bottom of door joint. No catches or latches of any kind project

New Yesbera Booth, Open and Closed.

to catch wearing apparel, only a substantial pull placed up out of the way, as may be seen in one of the illustrations.

Where the two sections of door join, the doors, when closed, show on the inside a wedge joint with hinges in the extreme point of this recess. This construction affords protection for the fingers and clothes, there being no possibility of them being caught between the two frames. Between the hinges are placed one-half inch round moldings securely closing the joint and giving necessary soundproof requirements.

Economy of space is obtained in this booth, as the door when open is, with the exception of three inches of longer leaf of door, entirely inside the booth. Then, too, by this operation of the door, perfect ventilation is secured as the user finds it rather difficult to close the door from a position outside the booth.

Nothing more can be desired in the construction as by the use of dry kiln lumber and finishing materials permanent finish is secured. Built-up panels assure protection against swelling, warping and splitting. The booth is lined with embossed sheet metal and between this lining and the wood is placed a soundproof material. This is of special composition, made especially for Yesbera, and embodies all that is necessary for the deadening of sound. Additional information will be sent upon request to the Yesbera Mfg. Co., at Toledo, Ohio.

The Goheen Pole Hole Digger.

The Goheen pole hole digger is the latest and is said to be the best digging tool for simplifying the work entailed in digging holes for setting poles. This digger can be used in any

The Goheen Digger in Perpendicular and Right Angle Positions.

kind of ground, wet or dry, and without the provoking experience of having the dirt fall back into the hole.

The Goheen pole hole digger is simply and substantially constructed, consisting in the main of a straight, strong, wooden handle varying in length in accordance with the kind of digging; a shank or ferrule; one leaf spring and a steel blade similar to that of an ordinary spade but cupped properly for digging purposes. Near the upper end of the blade is attached a case hardened eye so constructed that it has three flat surfaces for the pressure of the spring that rests upon the ferrule and bears upon this eye. The blade is thus held rigidly in three positions, as is shown in the accompanying illustrations: 1. in a perpendicular position for cutting the dirt loose; 2. in the position of a right angle for removing the dirt from the hole; 3. at an acute angle for filling purposes, or for use as a ditching tool.

The ferrule is neatly shaped for the adjustment of the wooden handle at one end and flattened below to accommodate the spring and fit into the slot made in the blade purposely for its reception. The end of the ferrule it attached to the eye and so arranged that while the tool is in the position of a right angle, the back of the ferrule and upper end of the shovel are flush with each other. Close to the upper end of the spring the ferrule is pierced by a set screw which comes in contact with the spring and is used to give the desired tension, according to the kind of digging contemplated.

The Goheen pole hole digger in a working position is a perfectly straight tool. Every piece is made of the best material and fits compactly against the other. With reasonable usage it is said that the Goheen digger will last a lifetime.

The digger may be used as a spade for the first foot or two if desired. The dirt may be loosened by chopping, and after it is ready for removal the digger may be placed in the hole at the side next to the operator and the dirt pushed toward the operator's side and tripped. The operation of

Blade of Goheen Digger Fixed at an Acute Angle.

tripping serves to shove the blade under the dirt ready for removal, leaving no chance of its falling back.

From this description it is obvious that the Goheen pole hole digger embraces a spade, digger, ditching tool and tamper all in one and at a reasonable cost.

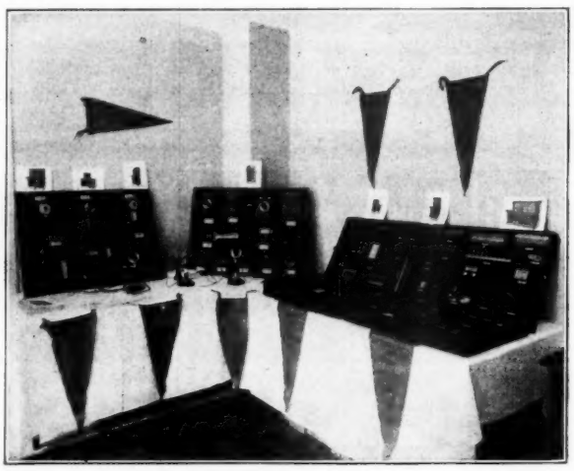
W. W. Holliday, general manager of the Illinois Telephone Co., Jacksonville, Ill., who has used this digger for some time, states that more work can be done in the same length of time and much easier than with the old shovel.

The Triple Tool Co. has been organized to promote the sale of this digger and its officers include E. E. Crabtree, president, and Fletcher F. Blackburn who will act as treasurer and general manager. The other stockholders are Edward E. Goheen, designer of the tool, and J. W. Walton. The company's headquarters will be in Jacksonville, Ill.

The men back of this enterprise are all prominent business men, Mr. Crabtree, its president, being the head of a prominent bank in Jacksonville besides being officially identified with several other institutions. Particulars and descriptive literature will be gladly sent upon request.

Stromberg-Carlson Exhibit at Pennsylvania Convention.

An interesting exhibit at the convention of the Western Pennsylvania Independent Telephone Association held recently at Johnstown, Pa., was that of the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y. All of the small



Stromberg-Carlson Equipment on Display Panels and Trays.

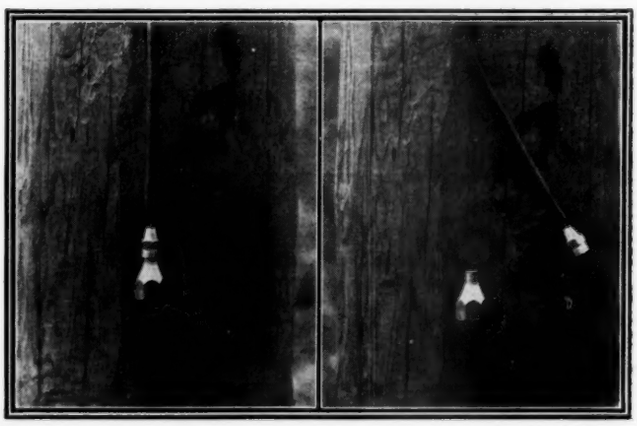
equipment exhibited was arranged on panels and in felt lined trays, as shown in the accompanying illustration.

The company's new "Duratex" cord created a great deal of interest. Several severe tests were made on the wire to the entire satisfaction of those present.

The exhibit was decorated with banners on which were imprinted the various classes of apparatus which the company manufactures. Photographs of switchboards and telephones were distributed among the attendants of the convention. It is stated by the company that several good sized orders were received.

The A Type F.M.C. Grounding Device.

The accompanying illustration shows the A type F.M.C. grounding device. With the use of this device the ground connection may readily be opened up for a test and then reconnected. This is clearly shown in the illustration. The lower end of the connection of the A type device is connected to a wire inside of the pipe which extends to an F.M.C. grounding point attached to the other end of the pipe. A bulletin



Ground Connection with F. M. C. Device—Disconnected for Test.

describing the F.M.C. connection devices will be mailed to those interested upon application to the Fargo Mfg. Co., Poughkeepsie, N. Y.

Paragraphs.

THE AMERICAN ROLLING MILL CO., of Middletown, Ohio, has issued an attractive 44-page booklet entitled "Defeating

Rust—The Story of Armco Iron," which contains some interesting facts relative to the history of iron and development of Armco iron which is guaranteed to be 99.84 per cent. pure iron. Copies of this booklet may be obtained upon request.

Signal Call for Use as Auxiliary to Telephone.

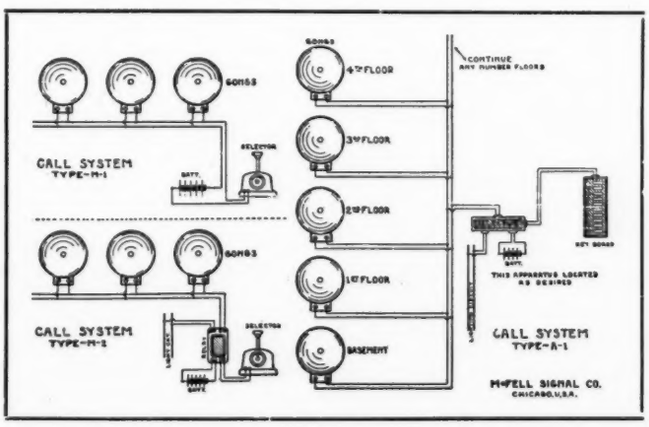
The efficiency of the working force in an establishment depends considerably upon the facilities for communicating promptly with the members of the superintending force, whose duties call them to different parts of the establishment, and when wanted, much valuable time is lost in locating them, causing annoying delays which may result in serious loss.

Calling Device.

The telephone has become the universal means of communication and is sufficient when one is at his desk; but, when away, it is inadequate and some additional means of keeping in touch with the office is necessary. By the use of the McFell signal call system as an auxiliary to the telephone, these difficulties are overcome.

This signal call system provides very effective and simple means of locating such persons, promptly, by simply setting a pre-arranged number on the dial of the "caller," shown in one of the illustrations. This will repeat an individual signal three times all over the building. The arrangement on the dial provides for 30 different calls.

Say for instance, Mr. Blank's number is 22. By setting both hands on two and pushing the lever down, the signal 22 will be repeated on every gong installed throughout the establishment. Considerable time is lost by trying to locate Mr. Blank by human voice or looking for him. Considering the cost of installation of the McFell call system, the maintenance cost being practically nil, it is contended that this equipment pays for itself in less than a year's time.



Circuits of Three Types of McFell Signal Call Systems.

Further particulars regarding this signal system may be obtained upon application to the McFell Signal Co., Halsted and Twenty-ninth streets, Chicago, Ill.

Results of Public Test of Faultless Guy Anchors.

Pursuant to an announcement made in a previous issue of TELEPHONY, the Faultless Anchor Co., of Fostoria, Ohio, on August 9 and 10, made an official public test of its pole guy anchors at the stock yard of the Cleveland Illuminating Co., of Cleveland, Ohio.

The attendance of such men as Messrs. McCarty, superintendent of construction, and Spangler, inspector of pole line construction of the Cleveland (Bell) Telephone Co., and Messrs. Sharp, superintendent of construction, and Richardson, line supervisor of the Western Union Telegraph Co., Mr. Burgess, superintendent of overhead construction of the Cleveland Illuminating Co., and Mr. Pearson, foreman of construction of the Ohio State Telephone Co., indicates the great concern of the big interests in insuring their pole line investment and the dependability of service through the agency of mechanical anchors.

The objective of the test was to obtain data, first, upon the holding strain, i.e., strain maintained without creeping; second, the ultimate or necessary strain to break or pull the anchor out of the ground. The former indicates what the anchor will do under actual operating conditions, and the latter the mechanical strength and ultimate capacity of the anchor.

The strain was applied to the anchors by connecting them through a dynamometer, a double set of large blocks and a heavy duty chain fall to a multi-guyed heavy pole of normal height. After a substantial initial strain had been applied, a mark was made on the anchor rod from which creeping after each succeeding pull could be seen and accurately measured. Strain was then again applied in increments of 500 to 1,500 pounds. Immediately after each strain, measurements were made for creep. An interval of five minutes without pull was then allowed and a measurement made for creep during this interval. Thus a complete record of the performance of the anchor was obtained up to the time it gave way.

Briefly, the final results on Faultless anchors were as follows:

No. 1—½-inch rod, 2-blade, 16-inch spread—held without creep at 5,500 pounds. This anchor made a most remarkable showing in that on the next strain it pulled its rod in two at 6,600 pounds.

No. 2—⅜-inch rod, 2-blade, 18-inch spread—held without creep at 4,800 pounds when one blade broke, due to flaw in casting. The capacity of this anchor is about 9,000 pounds.

No. 3—¾-inch rod, 3-blade, 18-inch spread—held without creep at 12,800 pounds—blades bent down at 13,200 pounds.

No. 4—1-inch rod, 4-blade, 24-inch spread—blades went down at 15,200 pounds without creep. This is a late addition to the Faultless line, intended to hold without creep at 16,000 to 18,000 pounds for dead end and cable strain service. No previous test had been made on it, because sufficient pulling apparatus had not been available. This test proved conclusively that more metal is required in the fins and this change is being made.

The basic principle of the Faultless anchor depends primarily upon virgin or undisturbed earth to hold it in the ground. The very large holding surface which it presents to undisturbed soil eliminates the tendency to creep. This test at Cleveland seems to bear out the feeling of the Faultless people that their principle is a substantial one—especially so in view of the extremely short time necessary to install the anchor.

Illinois Companies Divide Competing Territory.

The Western Illinois Telephone Co., with headquarters in Macomb, Ill., and the Mississippi Valley Telephone Co., with headquarters in Carthage, have divided the territory wherein they were competing so that in the future they will co-operate. The Western Illinois company gets the south tier of townships in Hancock county and the adjoining ones in Adams. It also gets exclusive exchanges in Bowen and Loraine.

The Mississippi Valley company gets the balance of Hancock county and exclusive exchanges in Carthage and Hamilton. In each of the four towns mentioned there have been two exchanges, one owned by each company in the past, but now there will be one only in each city.

Legal Cases and Decisions

By A. H. McMillan

House Moving in North Carolina.

A resident and tax payer of Kinston, N. C., had obtained a permit from the city authorities to move a house along the street from one place to another. The city had passed an ordinance regulating the moving of houses, which required a permit and that the mover should bear all expenses of moving electric light wires for the passage of such house, with penalty for allowing any building to remain in the same place more than six hours in a day, Sundays excepted. The city had granted the company a franchise, one section of which required it to observe the ordinances of the city then in force or thereafter to be enacted. The poles were erected under the supervision of the board of aldermen.

The tax payer obtained a permit from the authorities to move the building and then applied to the company's manager who told him to go ahead and he would remove the wires when necessary. Relying upon such permission, the property owner purchased a one-story building and then began its removal. The wires were actually cut, and the house was moved into the street and reached the first crossing, where the company's wires, poles and cables interfered. At this point the company's manager refused to remove the obstructions unless the plaintiff would pay the expenses. The plaintiff refused to pay the expenses and sold the building for $100. Then he sued the company for his damages, claiming to have sustained a loss of $400, as well as all profit from the proposed transaction.

The lower court directed a verdict in favor of the company, which was reversed by the supreme court of the state on the ground that there was an express agreement between the plaintiff and the company's manager upon which he could base an action for the company's subsequent interference with the removal of the house. The company contended that its manager agreed only to remove its wires but said nothing about removing the cables. The company also contended that its manager at Kinston was only a local manager and did not have authority to make such contract. The court held that the matter should have been submitted to the jury. Weeks vs. Carolina Telephone & Telegraph Co., 84 Southeastern, 812.

Discrimination Against Private Owner.

One W. T. Hill constructed a private telephone line from Sulphur Springs, Ark., to the city limits of Pine Bluff, and was permitted to connect with the system of the Pine Bluff Telephone Co. and use the service at the rate of $3 per month for the store and $2 per month for his residence. The Southwestern Telegraph & Telephone Co. bought the property of the Pine Bluff Telephone Co., but refused to furnish him service on the former terms and imposed a charge of $9 per month for his store and $8 a month for his residence, which he alleged was discriminatory. He brought suit against the telephone company for a penalty under the statute forbidding discrimination between the applicants for service.

The point of difference between the parties was with respect to the ownership of the line the plaintiff claimed to own. The Southwestern company claimed that it purchased it from the Pine Bluff Telephone Co. and was so informed at the time of its purchase. It undertook to justify the charge of the advance rate on the ground that it was a rate fixed applicable to all persons on rural routes where the lines were not owned by the patrons. Under those circumstances there was a fixed charge for telephone rent and what they called a radius charge based upon mileage. There was no testimony offered to show that the telephone company owned the line but the uncontradicted testimony of the plaintiff showed that he owned it.

The court held that the statute under which suit was brought applied only to wilful refusal to furnish service. The court held that the evidence should have been submitted to the jury. Hill vs. Southwestern Telegraph & Telephone Co., 172 Southwestern 115.

Enforcing Connection Contract.

A suit was begun to enjoin the American Independent Telephone Co., of Kansas, from a threatened disconnection of the plaintiffs' telephone line with the telephone company's exchange at Holton and from the refusal of certain rates and privileges stipulated in an agreement previously made.

The plaintiffs individually and as an unincorporated association of farmers, known as the Bills Creek Telephone Co., made a contract which they alleged the defendant threatened to discontinue. The contract contained no provision as to its duration or the time within which the services and conditions were to be performed. The court held that parol evidence to supplement and explain the written provisions was admissible. The company contended that the contract was not enforcible because of the provisions of the public utilities act, passed long after the making of the contract. The court said:

"The passage of the act did not automatically overthrow contracts nor set aside schedules of rates which had been agreed upon. Neither did the fact that the defendant published and filed a schedule of rates with the public utilities commission abrogate the contract. In any event, rates previously agreed upon between utilities and patrons will continue in force until the commission has found them to be unreasonable and has prescribed other rates. The passage of the act did not take from the court the power and duty to prevent the interruption of the service at the rates agreed upon or otherwise fixed until action had been taken by the commission."

The court granted the injunction sued for. Kaul vs. American Independent Telephone Co., 147 Pacific, 1130.

Directions for Removing Guy Wire.

An inexperienced lineman was employed by an electric company in changing its wires to a new location. The superintendent, who was present, told the lineman and another workman to remove a guy wire which ran from a stub pole and to attach it to a telephone pole a few feet away. The superintendent gave no instructions as to how the work should be done. The lineman then undertook to remove the guy wire. The other workman, placing a ladder against the stub, climbed it carrying a block and falls, and attached it to the guy wire. Then he climbed down and set up the falls, making them fast to a fence. He then climbed the ladder again, taking with him bolt cutters. After cutting the guy he descended to the ground and slacked off the falls. While he was engaged in pulling the guy wire down from the return wires where it had lodged, the lineman in question climbed the ladder to remove from the stub the stopper which attached the block and falls to the stub. Immediately afterwards the stub pole broke off two or three inches below the ground, which was frozen, and the lineman was thrown over a fence onto some rocks and instantly killed.

The lineman's daughters brought suit against the company under the employers' liability act, alleging a defect in the appliances and mechanism used in the company's business and also negligence of the superintendent. The court held that the evidence did not warrant a finding that the pole belonged to the company, so as to allow recovery for failure to furnished safe appliances and mechanism. It was also held that the order given by the superintendent without directions as to how the work should be done, did not imply an assurance that the pole was safe, so as to show negligence, if it was in fact defective, which fact could easily have been discovered by the lineman. The court also held that the superintendent was not negligent in failing to give directions to the experienced lineman, since the latter was presumed to know the proper method. Exclusion of testimony by an expert introduced by the plaintiff to testify that the method adopted by the deceased in doing the work was improper, was held to be correct under the circumstances. Judgment was entered for the defendant. McLellan vs. Boston Elevated Railway Co., 108 Northeastern 767.

Inspection of Poles.

A suit was brought against a telephone company for damages by one injured by a falling telephone pole. The rules of the company required the linemen to inspect poles before mounting them. It was held that these rules would not, in the absence of any other showing, warrant a finding that the lineman had inspected and knew of defects in the pole which fell and injured plaintiff. Southern Bell Telephone & Telegraph Co. vs. Miller, 68 Southern, 184.